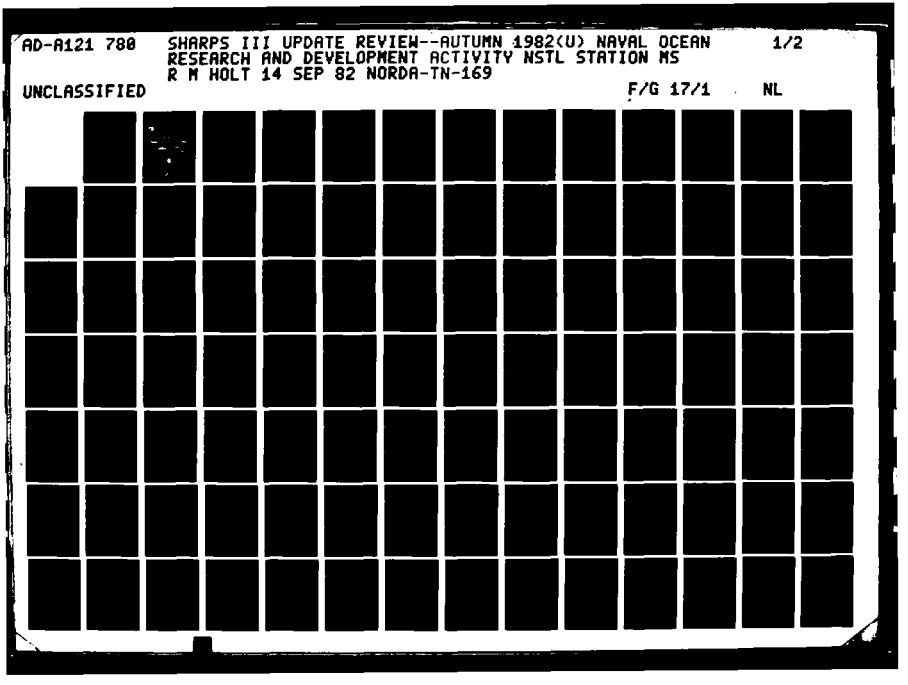
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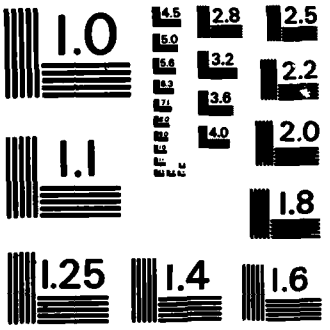


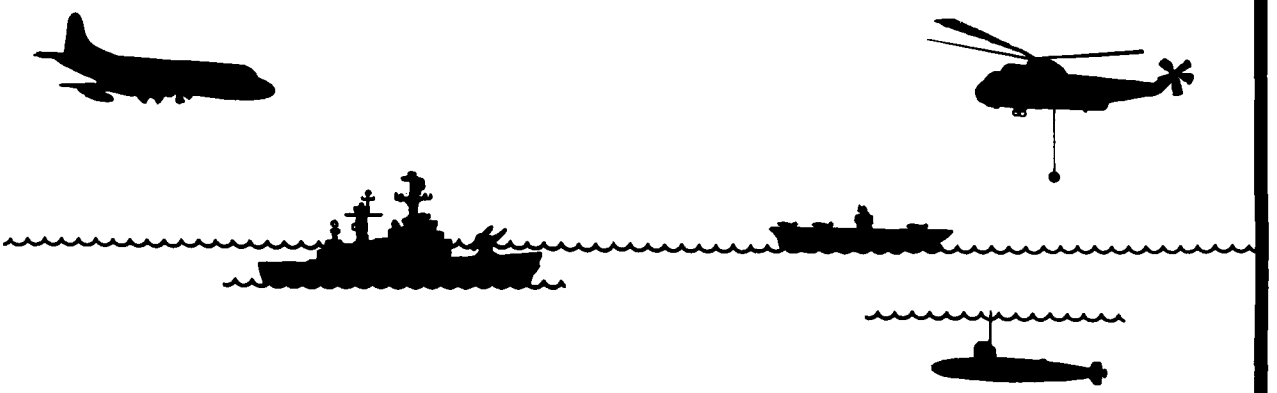
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Naval Ocean Research
and Development Activity
NSTL Station, Mississippi 39529

NORDA Technical Note 169

Tactical ASW Environmental Acoustics Support Project

SHARPS III Update Review—Autumn 1982



R. M. Holt
Ocean Data Systems, Inc.

September 1982

SHARPS III UPDATE REVIEW
AUTUMN 1982

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ABSTRACT

This report documents a series of four update sets prepared for the SHARPS-III model and the SHARPS-III preprocessor at the Naval Ocean Research and Development Center (NORDA) and the Fleet Numerical Oceanography Center (FNOC). The first update, which was incorporated in July, 1982, reduced the length of the SHARPS-III output message by eliminating blank lines. The second modification added a capability to generate active sonobuoy predictions. The remaining two sets changed the method of determining self-noise for hull mounted sonars, and altered the effective ray angles at the sonar and surface used in computing surface reverberation from surface ducted paths. The latter three updates were prepared for implementation in the scheduled 01 Oct 82 SHARPS-III update. Included as appendices to this report are sample SHARPS-III outputs demonstrating the effects of these modifications and listings of the relevant update cards.

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1.0 INTRODUCTION

The purpose of this report is to provide technical documentation on a series of four updates prepared for the operational version of the SHARPS-III model and the SHARPS-III preprocessor at Fleet Numerical Oceanography Center (FNOC), Monterey, California. Each update addresses a different issue and is independent of the others. Within this document, the following short descriptive titles will be used to reference each update: (1) Message Compaction, (2) ASB (for Active Sonobuoy), (3) Self-Noise, and (4) Ray Angle Treatment. The Message Compaction update was installed independently at FNOC in July, 1982. The other three were combined into a Consolidated Update delivered to FNOC for the scheduled 01 Oct 82 SHARPS update. The following table lists the relevant program file names and cycles as cataloged on the NORDA CDC computer system:

Update Name	File* Name	Input Cycle	Output Cycle	ID
Message Compaction	SHARPSNORDAPL	17	18	TEASLIB
	SHARPSNORDALGO	17	18	TEASLIB
Consolidated Update	USERPL	17	19	TEASLIB
	USERLGO	17	19	TEASLIB
	POSTSORTPL	17	19	TEASLIB
	POSTSORTLGO	17	19	TEASLIB
	SHARPSNORDAPL	18	19	TEASLIB
	SHARPSNORDALGO	18	19	TEASLIB
	SHARPSACCPL**	4	4	TEASLIB
	SHARPSACCLGO**	4	4	TEASLIB

*NOTE: File names ending in "PL" are CDC Program Library files containing source code images. File names ending in "LGO" are binary, or object code files.

**NOTE: These files were not affected by this update. They are shown here to complete the list of SHARPS related program files at NORDA.

The PL's are, to the greatest extent possible, duplicates of the operational versions at FNOC as of April, 1982. The only differences appear in SHARPSNORDAPL where the "LEVEL" statement (declaring extended core storage) was removed and several dummy and simulation routines were added to satisfy external references to unique FNOC subprograms. All such subprograms have only a cosmetic effect on SHARPS and in no way change computed values.

To comply with standard SHARPS update procedures, each update set has been assigned a unique three digit SHARPS Update Number (SUN) that is permanently associated with that set. For each update and affected program, two files have been cataloged at NORDA. The first file contains the update card images and the second is a full binary file created by applying the update images to the baseline PL. Similarly, two files have been generated for the final Consolidated Update set. The binary files have been used to test all updates. The naming convention adopted for these files uses the name of the baseline program followed by either "UPDATE" for the update card images, or "TEST" for the binary. This is followed by the SUN and a single letter that specifies the version of an update set. The binary file names always end with "LGO". The cycle numbers of these files are identical to the cycle numbers of the baseline programs. The following table summarizes program files at NORDA associated with individual update sets:

Update Name	SUN	Update Card Image File	Binary File	Cycle	ID
Message Compaction	007	SHARPSUPDATE007A	SHARPSTEST007ALGO	17	TEASLIB
ASB	008	USERUPDATE008B	USERTEST008BLGO	17	TEASLIB
		POSTSORTUPDATE008B	POSTSORTTEST008BLGO	17	TEASLIB
		SHARPSUPDATE008C	SHARPSTEST008CLGO	18	TEASLIB
Self-Noise	009	USERUPDATE009A	USERTEST009ALGO	17	TEASLIB
		POSTSORTUPDATE009A	POSTSORTTEST009ALGO	17	TEASLIB
		SHARPSUPDATE009B	SHARPSTEST009BLGO	18	TEASLIB
Ray Angle Treatment	011	SHARPSUPDATE011C	SHARPSTEST011CLGO	18	TEASLIB
Consolidated Update	012	USERUPDATE012A	USERTEST012ALGO	17	TEASLIB
		POSTSORTUPDATE012A	POSTSORTTEST012ALGO	17	TEASLIB
		SHARPSUPDATE012C	SHARPSTEST012CLGO	18	TEASLIB

By using the naming convention described above, it is convenient to reference a particular program version as program name baseline program cycle . SUN . For example, SHARPS 18.8 refers to SHARPS, cycle 18, with ASB updates applied.

The remainder of this document will describe each update in detail. Four topic areas will be addressed (where applicable) for each update: Problem, Analysis, Solution, and Results. "Problem" will entail an account of how the requirement for each update becomes known, including sample runs to demonstrate the problem where appropriate. "Analysis" will discuss shortcomings in the physics and/or the coding of the programs that created the problem. "Solution" will provide a technical description of modifications to the physics and/or coding employed to correct the problem. "Results" will present sample runs demonstrating the effects of each update. All sample runs are included as appendices to this document. Under this format, Sections 2.0, 3.0, 4.0, and 5.0 will discuss the Message Compaction, Active Sonobuoy, Self-Noise, and Ray Angle Treatment update sets, respectively.

FNOC updating procedures require that a unique update ident be defined for every subroutine and COMDECK that is modified. Each ident consists of the deck name followed by a two digit sequence number that is incremented with each new update. An asterisk may precede the sequence number if the maximum number of characters (nine) is not exceeded. It should be noted that whenever a COMDECK is modified all routines containing that COMDECK are also updated, even if no coding changes are required. This is accomplished by replacing only the "latest change date" card in such routines. Within SHARPS, deck names associated with COMDECKS are preceded by a "$". Appendix A lists all update idents implemented in conjunction with the July and October, 1982, update sets.

Additional appendices to this publication present sample outputs and update card images. Specifically, updates for Message Compaction, Active Sonobuoys, Self-Noise, and Ray Angle Treatment appear as Appendices C, G, I, and L, respectively. Appendices B and D demonstrate the results of the Message Compaction update. Appendices E, F, and H show sample inputs and outputs relating to the Active Sonobuoy update. The impact of the Self-Noise update is displayed in Appendices J and K. Similarly, Ray Angle Treatment effects are contained in Appendices M and N.

When the Active Sonobuoy, Self-Noise, and Ray Angle Treatment updates are taken as a whole with conflicting updates reconciled, they comprise the final deliverable SHARPS update for FNOC. This version is referenced as 18.12 and will become 19.0 after final test and evaluation of these updates by FNOC. The only conflicting updates occurred in deleting the "latest change date" cards within subroutines that were affected by both the Active Sonobuoy and Self-Noise updates. In these cases, the references to those cards were removed from the Active Sonobuoy correction set when assembling the Consolidated Update set. Appendix O presents sample SHARPS messages from the final SHARPS 18.12 version.

Appendices P, Q, and R contain special tables recording the history of update identifiers installed in programs USER, POSTSORT, and SHARPS, respectively, since the inception of the NORDA configuration management effort for SHARPS. The right side of each table lists the idents for each COMDECK and DECK in columns under the appropriate program version designator. Columns delineated by double lines indicate a consolidated update set that was implemented in the operational model. Version designators are derived from the baseline program cycle number at NORDA, followed by a SHARPS Update Number. The left side of each table provides a quick reference to the DECK names in which each COMDECK appears.

The sonar description files input to SHARPS for all runs displayed in this document are "bogus" files that contain false parameter values and dummy sonar names, but generate message formats similar to those that will be output at FNOC.

2.0 MESSAGE COMPACTION

2.1 PROBLEM

The request to reduce the length of the standard SHARPS output message by eliminating blank lines and excluding the SQS-39 sonar was initiated by a serial letter from FNOC to CNOC, and was confirmed through a telephone conversation with LT B. Northridge on 02 Jun 82. Such a reduction would shorten a SHARPS message by approximately 25% without impacting adversely on user interpretation. The FNOC letter noted that no SQS-39 equipped ships are in operation and recommended eliminating that device from the standard message. Appendix B presents a simulated SHARPS output message prior to July, 1982.

2.2 ANALYSIS

Excess blank lines in the SHARPS message were generated by three format statements in subroutine TITLINE that wrote the title lines of the message and one format statement in subroutine MSGLINE that wrote the prediction line for the dipping sonar. The presence or absence of any sonar in a SHARPS message reflects the contents of the sonar description file, not the status of the SHARPS code.

2.3 SOLUTION

The appropriate format statements in subroutines TITLINE and MSGLINE were updated to avoid the excess blank lines. This effort resulted in the creation of the SHARPS Message Compaction update (SUN=007) which was implemented at FNOC in July, 1982. This correction set also was used to update SHARPS 17.0 at NORDA, resultling in the creation of SHARPS 18.0. Relevant update card images are listed in Appendix C.

A revised input deck was prepared for the SHARPS preprocessor which omitted cards relating to the SQS-39. This input was used to create a new standard sonar description file at FNOC.

2.4 RESULTS

The revised standard message format is demonstrated in Appendix D.

3.0 ACTIVE SONOBUOYS

3.1 PROBLEM

The impetus to proceed with an active sonobuoy prediction capability within SHARPS was generated largely by file memos from Bill Kirby (SAI) dated 25 Jan 82, 18 Feb 82, and 22 Feb 82. These memos led to decisions concerning which buoys and which modes of operation should be included, and how the output should be formatted. Specifically, it was decided that SSQ-47, SSQ-50, and SSQ-62 prediction capability should be made available for the October, 1982, update. As shown in Appendix H, direct path and counter-detect predictions would be performed for both shallow and deep sonobuoy depths for a single operating frequency and various combinations of pulse lengths and wave forms (either continuous wave (CW) or FM). The different wave forms were to be simulated by using different noise limited recognition differential values. Additionally, the CW predictions for both the SSQ-50 and SSQ-62 were to be considered always noise limited, thus they require no time consuming reverberation calculations.

3.2 ANALYSIS

The basic design features of SHARPS-III make it receptive to new sonars and output formats with relatively minor modifications. The three features of active sonobuoy processing that differ significantly from previously incorporated sonars are (1) the application and display of different pulse lengths within the forecast title line for a sonar, (2) the assumption that certain predictions will always be noise limited, and (3) the fixed depths associated with the sonobuoys that could exceed the bottom depth. Other than those peculiarities, the incorporation of the active sonobuoys was basically harmonious with SHARPS-III structure.

3.3 SOLUTION

Two new title line types and two new message line types were introduced to accommodate the title and prediction line formats, respectively, for the active sonobuoys. Specifically, the SSQ-47 requires title line type 10 and message line type 11; both the SSQ-50 and SSQ-62 require title line type 12 and message line type 13. These must be specified on the system parameter cards

(type 10 cards) input to the SHARPS preprocessor when generating a sonar description file that will drive SHARPS through active sonobuoy predictions. Title line type 10 is designed to contain a single pulse length while title line type 12 will display 4 pulse lengths. This requirement presented a special problem in SHARPS because of the absence of a direct correlation between a title line type and a pulse length. To create such a correlation would have required an additional array in the sonar description file, thus rendering all existing files obsolete. Clearly, such a solution was unacceptable. The alternative was an update to subroutine MSGPRT in which the relative position within the SHARPS message of the first prediction range associated with a title line is used to define search keys to identify sonar description table line numbers that are relevant to that title line. The applicable pulse lengths are then retrieved from those sonar description table lines and passed to subroutine TITLINE for inclusion in the title line.

In a modification designed to allow for the possible inclusion of the three sonobuoys in the standard SHARPS message, various array sizes were increased within programs USER, POSTSORT, and SHARPS to permit up to 75 system parameter cards, 65 electronic parameter cards (type 21), 12 unique sonar depth codes, and 15 title and 35 message lines in the SHARPS output message. At the present time, however, it is anticipated that a separate sonar description file will be established for active sonobuoy predictions.

It is inherent in the design of the sonar description table that each active line, i.e., each line that relates to a direct path, convergence zone, or bottom bounce prediction has associated reverberation lines. SHARPS computes a target echo table for the active line and a reverberation table for the reverberation lines, then examines both tables in determining a reverberation limited detection range, if that range is shorter than the noise limited range. The specifications for the active sonobuoy processing allow the assumption that all direct path, CW forecasts for the SSQ-50 and SSQ-62 are noise limited. This assumption permits a significant savings in execution time because all reverberation calculations that would normally be required to support the aforementioned direct path predictions can be by-passed. The following modifications were implemented to take full advantage of this situation:

The user must punch a value of -99. for recognition differential for reverberation on those type 21 cards (preprocessor input) that relate to direct path, CW forecasts for the SSQ-50 and SSQ-62. This value serves as a sentinel in the preprocessor and SHARPS to skip related reverberation considerations. Specifically, in USER the test to determine if new reverberation lines are needed to support an active line is expanded to consider the value of the reverberation recognition differential. Additionally, updates to SHARPS subroutine RANGER set and test a logical flag that indicates if the current sonar description table line is a "no reverb" line. This flag precludes retrieving a reverberation table from extended core storage when processing such a line, and sets the detection range at the FOM (Figure of Merit), or noise limited range. The diversion from the expected sonar description table contents (i.e., each active line has associated reverberation lines) created an additional problem in subroutine RANGER that could cause an incorrect reverberation table to be used when processing a line that requires reverberation data. This obstacle was overcome by incorporating a definitive test on the required reverberation table that overrides certain assumptions regarding the sonar description table contents inherent in the previous test.

In accommodating the active sonobuoys, USER was updated to recognize seven new sonar depth indicators from type 21 cards. The first three characters of these indicators designate the sonar ("Q47", "Q50", or "Q62") and the fourth character must be either "S", "I", or "D" for shallow, intermediate, or deep, respectively (only the SSQ-62 can use the intermediate depth). The preprocessor derives four new sonar depth codes for the sonar description table from these indicators. Code 40000. specifies a shallow sonobuoy (all three buoys have the same shallow depth setting); 41000. specifies the intermediate depth for the SSQ-62; 42000. specifies a deep SSQ-47; 43000, specifies a deep SSQ-50 or SSQ-62 (which have the same deep setting). Updates to SHARPS subroutine STDEPTH interpret these codes appropriately and assign the actual sonar depths to elements in the sonar depth array (ZSON) and to new sonar depth variables.

SHARPS has a built-in safeguard that automatically relocates any calculated or requested sonar depth to a point at least one meter above the bottom if the sonar is originally at or below the bottom. Such processing is inappropriate for active sonobuoys which have fixed depths and should never be deployed where

the bottom is too shallow. It was decided that if an active sonobuoy depth exceeded the bottom, the associated prediction line(s) would be omitted from the SHARPS message, and an explanatory note would be placed in the dayfile. To accomplish this, an array is defined in subroutine STDEPTH containing the sonar depth codes of any active sonobuoys that are deeper than the bottom. This array is referenced by program SHARPS and subroutine RANGER when sequentially processing sonar description table lines, and all processing is by-passed for lines that relate to an active sonobuoy that exceeds the bottom depth. Furthermore, subroutine MSGLINE examines this array, and skips the writing of any message lines for which the sonar depth is too deep. The dayfile message is generated from MSGLINE.

On additional update necessitated by the incorporation of active sonobuoy predictions was increasing from nine to twelve the number of sonars for which predictions may be specifically requested via the SHPSIN file (TAPE25). This consideration will allow the active sonobuoy capability to be included with the standard message.

This effort resulted in the creation of the Active Sonobuoy updates (SUN = 008) for programs USER, POSTSORT, and SHARPS which were included in the 01 Oct 82 update package. Relevant update card images are listed in Appendix G.

3.4 RESULTS

Appendix E presents simulated input to the SHARPS preprocessor for a sonar description file that will drive SHARPS through active sonobuoy predictions for three buoys (designated SBA, SBB, and SBC on the type 10 cards). Note the following features of the input: (1) the platform speed is 0.0 knots, (2) the title lines are type 10 or 12), (3) the message lines are type 11 or 13, (4) new sonar depth indicators are employed (e.g., Q50D), and (5) reverberation recognition differential values of -99. are entered for the noise limited cases. Appendix F contains the full contents of the sonar description file generated by the input in Appendix E. All data shown in Appendices E and F are false. To initiate an operational active sonobuoy capability, a card deck similar in form to Appendix E but containing actual parameters was prepared and delivered to FNOC.

A sample SHARPS Active Sonobuoy Message is presented in Appendix H. Execution time for this message at NORDA was 195 seconds, or about 22 seconds per environment. FNOC execution times should be somewhat longer.

4.0 SELF-NOISE

4.1 PROBLEM

The issue of high sea state predictions by SHARPS that are overly optimistic and/or in poor agreement with other prediction systems and operating guidelines was discussed in a SHARPS file memo from Bill Kirby (SAI) dated 10 August, 1981. This memo recommended that SHARPS should be modified to use wind speed instead of sea state as the basis for calculating self-noise because of the accuracy of wind speed measurements compared to wave heights, and because wind speed drives self-noise determination in SIMAS. A more specific proposal, which included candidate coding, was presented in a follow-up memo dated 16 June, 1982, which recommended (1) removal from SHARPS of the method of deriving self-noise values for sea states 1 through 9 (i.e., return to using sea states 1 through 5 only), and (2) incorporation of the SIMAS algorithm which contains an inherent extrapolation for determining self-noise at wind speeds above sea state 5. The main reasons for deleting the existing SHARPS high sea state capability are the uncertain validity of the generated self-noise values, and the desirability of improving agreement with other prediction systems.

4.2 ANALYSIS

The algorithm which allowed SHARPS to derive and use self-noise values at sea states 1 through 9 was implemented with updates to programs USER, POSTSORT, and SHARPS in December, 1980. These updates introduced a flexible method for allowing the preprocessor to establish the desired self-noise tables for nine sea states in a sonar description file through either (1) values entered directly on cards, (2) values stored in program USER for certain sonars and operating modes, or (3) values calculated within USER. This capability could be removed by "yanking" the appropriate update identifiers, thus restoring the old code. ("Yanking" refers to use of a CDC UPDATE processor that removes all cards associated with specified correction sets, and restores any cards that may have been deleted by those sets.) A few desirable enhancements included in the December 1980 update that were unrelated to the high sea state functions would

be reinstated following the yanks. A problem arising from reverting to the old code was that all sonar description files created and cataloged at FNOC since December, 1980, would be rendered incompatible with the new version of SHARPS unless additional updates were included to allow SHARPS to accept sonar description files with either 5 or 9 sea states.

The candidate coding entailed an update for subroutine SLFNOYS which establishes a table relating sea state to wind speed. For a given wind speed, the bracketing sea state numbers are determined. The final self-noise value is then calculated by two-way interpolation in the self-noise tables based on (first) ship speed at each bracketing sea state and (second) wind speed. The coding generally followed the notation used in SIMAS.

4.3 SOLUTION

The update sets that established the high sea state capability were identified by examining old update listings from December, 1980. A correction set was prepared for each relevant program (USER, POSTSORT, and SHARPS) that yanked these old sets, and selectively reinserted a few minor features that remain necessary. A special addition to subroutine SONIN causes the resultant SHARPS program to determine whether an input sonar description file contains self-noise data for 5 or 9 sea states. If it has 9 sea states, the values for sea states 6 through 9 are read into dummy variables and ignored. Thus, all existing sonar description files remain compatible with the new SHARPS version.

The candidate coding that updated subroutine SLFNOYS received minor modifications to meet ODSI programming standards without changing the premise of the logic.

This effort resulted in the creation of the self-noise updates (SUN = 009) for programs USER, POSTSORT, and SHARPS which were included in the 01 Oct 82 update package. Relevant update card images are listed in Appendix I.

4.4 RESULTS

Test results of the self-noise update are presented in Appendices J (without updates or SHARPS 18.0) and K (with updates or SHARPS 18.9). Data used comprised three identical environments with the exception of wave heights and wind speeds which increased from 5 to 15 feet and 10 to 30 knots, respectively, with successive input profiles. Predicted detection ranges from SHARPS 18.9 (wind speed driven) are longer at the lower wind speed because the wind speed is between sea states 2 and 3, while the SHARPS 18.0 (or sea state driven) case uses sea state 4 to calculate self-noise. At the higher wind speed, the SHARPS 18.9 ranges are shorter because the 30 knot wind speed produced an effective sea state of 7, while SHARPS 18.0 truncated sea state to 5 because the input sonar description file had only 5 sea states. These results are not intended to serve as a definitive statement on the value of this modification, but the increased sensitivity to higher wind speeds is a desirable trend. The ultimate evaluation of the benefits from this self-noise update will require extensive operational application.

5.0 RAY ANGLE TREATMENT

5.1 PROBLEM

This update was initiated by a SHARPS-III file memo from Bill Kirby dated 11 August 82. The following text paraphrases that memo: The current use of eigenrays in SHARPS is not sufficient to give representative ray angles at the sonar and surface for surface reverberation calculations within a surface duct.

5.2 ANALYSIS

The best known source documenting this shortcoming as referenced in the Kirby memo is "Recommended Short Term Repair of NISSM II", A. I. Eller and H. J. Venne Jr., Science Applications, Inc., SAI-83-712-WA, March 1982. This publication showed that the angle treatment in models LIRA and LORA better matched actual surface reverberation data. Ray angles are defined to be functions of the sound speeds at the surface, sonar, and layer depth.

5.3 SOLUTION

The following excerpt from the Kirby memo defines the appropriate ray angle calculations:

Angle at the sonar

$$\phi_S = \frac{1}{2}\,\phi_L$$

where

$$\phi_L = \cos^{-1}\frac{C_S}{C_L}$$

is the surface duct limiting ray path angle, and C_S and C_L are the sound speed at the sonar and layer depths. The angle at the surface is

$$\phi_o = \cos^{-1}\frac{C_o}{C_L}\cos\phi_S$$

where additionally C_o is the sound speed at the surface.

To implement this change, an update was prepared for subroutine EIGEN in which the sonar and surface (target) ray angles assigned to each eigenray are calculated according to the above mathematics whenever (1) the sonar is within the surface layer, (2) the target is at the surface, (3) the AMOS flag is set, and (4) the eigenray vertexes in the layer. The surface angle is always set to the negative of the calculated value.

This effort resulted in the creation of the SHARPS Ray Angle Treatment update (SUN = 011) which was incorporated in the 01 Oct 82 update package. Relevant update card images are listed in Appendix L.

5.4 RESULTS

The impact of this update is shown in surface reverberation tables contained in Appendices M (without updates or SHARPS 18.0) and N (with updates or SHARPS 18.11). The following profile was used in both cases with wind speed set at 24 knots:

Depth (m)	Sound Speed (m/s)
0.	1513.5
100.	1521.5
800.	1485.0
1000.	1482.1
1600.	1485.7
2000.	1492.1
5000.	1541.9

Both tables show surface reverberation data as a function of time for a simulated SQS-23 sonar. The values appear very low because the effects of source level and horizontal beamwidth have not yet been included.

The magnitude of the differences in surface reverberation levels reaches 6. to 7. dB at certain times with the SHARPS 18.11 version generating the higher values. The resulting direct path prediction ranges decreased sharply in many cases. Such changes are expected because the test profile was designed to produce exaggerated surface reverberation effects from ducted paths (deep, strong surface layer and high wind speed) to demonstrate the potential impact of this update. For most environmental conditions, this modification is not expected to make significant changes to SHARPS forecast ranges, but it does represent another step toward improving agreement between prediction models.

This update is not expected to make significant changes to predicted SHARPS ranges, but it represents another step toward improving agreement between prediction models.

APPENDIX A

UPDATE IDENTS

Update Name	SUN	Affected Program	Update Idents
Message Compaction	007	SHARPS	TITLINE06 MSGLINE16
ASB	008	USER	$LARAYU02 $TARAYU02 USER*12 LINEU*04 TITLEU*04 UNSORTU05
		POSTSORT	$LARAYP02 $TARAYP02 POSTSRT09 TITLEP*04 LINEP*04 UNSORTP05
		SHARPS	SHARBLK11 $MSGTIT06 $OUTDAT2 $SONTAB03 SHARP3*24 ENVIN*29 STDEPTH17 RANGER320 MSGPRT*22 MSGLINE17 TITLINE07 * CONVERT08 * LINE3*03 NM2*25 * SONIN*11 * TITLE3*05 * SETDIP*09 * SNOYSDP07 * SNOYSVD11 * VDSLVL*06
Self-Noise	009	USER	$NOYSU*02 USER*13
		POSTSORT	$NOYSP*02 POSTSORT10 NOISEP*04

Update Name	SUN	Affected Program	Update Idents
		SHARPS	$SONDES08
			ENVIN*30
			NOISE3*07
			SLFNOYS09
			SNOYSDP08
			SONIN*12
			* SHARP3*25
			* MSGLINE18
			* MSGPRT*23
			* NM2*26
			* RANGER321
			* SEXY*07
			* SNOYSVD12
			* UNSORT307
			* VDSLVL*07
Ray Angle Treatment	011	SHARPS	EIGEN*18

* Note: Indicates an update required only because a resident COMDECK was updated.

APPENDIX B

SAMPLE SHARPS 17.0 OUTPUT

SHARPS III PREDICTION BASED ON 10 11Z SEP 82 DATA

```
01SP/EOTS 81032700Z MO/ 17.5/1513/   32/ 17.5/1514,   34/ 17.5/1514
   90/ 16.0/1510,  140/ 13.9/1504,  180/ 12.2/1499,  200/ 11.5/1497
  240/ 10.4/1494,  300/  9.0/1491,  400/  7.9/1488,  500/  7.0/1487
  800/  5.2/1484, 1200/  3.9/1486, 2000/  2.4/1493, 2200/  2.2/1496
 3000/  2.0/1509, 4000/  1.9/1526, 4206/  1.9/1529
DRX(3260/  943)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(4206)SLD(  34)
DP TGT   95 AVG SVL  1501 POD 50.

SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
 ALL   23/ 32      22/ 24       1/ 12            922/1190

SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 MO/1 10)/ 39      74/ 39      32/ 39      -    2099/3571
 MO/2  23/ 28      23/ 28      23/ 28           2099/3571

SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD   99/ 43      77/ 41      34/ 39           1887/2976
 BTP  145/ 44     127/ 44     110/ 44  591-604 2417/3571
 PSV OT   66 -  66/  45 -  45 NSY  237 -2380/  49 -2316

SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
 GUD   96/ 44      42/ 40      30/ 38           1570/2380
 BTP  123/ 44     101/ 44      74/ 40           1887/2380

SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  13?/ 45      99/ 44      34/ 39           2417/3571
 BST  18?/ 45     147/ 45     107/ 45  588-615 2628/4166
 BR  MIN-A/R  35/110 MAXSE-A/R  20/255 MAX-A/R  15/365
 PSV OT  121 - 604/  48 - 583 NSY  296 -1785/ 408 -1737

SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  192/ 45     168/ 45     127/ 45           2417/3571
 BST  246/ 45     222/ 45     177/ 45  588-640 2628/4166
 BR  MIN-A/R  35/110 MAXSE-A/R  10/421 MAX-A/R  10/543
 PSV OT  234 -1190/  49 -1158 NSY  550 -2976/ 546 -2895

SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  186/ 45     181/ 45     167/ 45           2417/3571
 BST  240/ 45     235/ 45     221/ 45  588-636 2628/4166
 BR  MIN-A/R  35/110 MAXSE-A/R  10/407 MAX-A/R  10/530
 PSV OT  219 -1190/  49 -1158 NSY  538 -2976/ 540 -2895

SNH ---12KTS------18KTS------TD--------------CDC/CDM-
 GUD   28/ 34      28/ 34      45               864/ 864
 BTP   28/ 34      28/ 34      45               946/1158
 GUDP  28/ 34      28/ 34      45               864/ 864
 BTPP  28/ 34      28/ 34      45               946/1158

SNI    23/ 34     DD   6      PSV    1 -   1    CDC 1067 CDM 1190
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OSFA/FOTS 81032700Z MO/ 20.7/1523/   81/ 18.5/1518,  101/ 17.6/1516
  121/ 17.0/1514,  140/ 16.0/1512,  160/ 14.9/1509,  199/ 13.5/1505
  300/ 11.3/1499,  400/  9.5/1494,  600/  5.6/1482,  650/  5.2/1481
  700/  4.8/1481,  800/  4.1/1479, 1400/  2.6/1484, 1800/  2.1/1489
 2100/  2.0/1493, 2600/  1.8/1501, 3000/  1.5/1507, 5121/  1.5/1544
ORX(3937/ 1183)GR( 2.0)BL(1/1)WH( 1)WS(13)BD(5121)SLD(   0)
OP TGT   61 AVG SVL  1506 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   23/ 34      23/ 31      22/ 22           942/1286

 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1  11/ 34      11/ 34      11/ 34      -    1993/3216
  MD/2  23/ 28      23/ 28      23/ 28           1993/3216

 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   15/ 34      15/ 34      15/ 34           1358/2509
  BTR   17/ 34      17/ 34      17/ 34  635-646 1782/3136
  PSV QT   32 -  32/  32 -  32 NSY   33 -1930/  33 -1881

 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   12/ 34      12/ 34      12/ 34           1067/1881
  BTR   12/ 34      12/ 34      12/ 34           1358/2509

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   23/ 34      23/ 34      23/ 34           2205/3216
  BST   21/ 34      21/ 34      21/ 34      -    2417/3860
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV QT   33 - 657/  33 -  33 NSY   33 -1930/  33 -1254

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   23/ 34      23/ 34      23/ 34           2205/3216
  BST   21/ 34      21/ 34      21/ 34  639-668 2417/3860
  BB  MIN-A/R  15/336 MAXSE-A/R  10/462 MAX-A/R  10/517
  PSV QT   33 -1286/  33 -1254 NSY  575 -2573/ 584 -2509

 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   23/ 34      23/ 34      23/ 34           2205/3216
  BST   21/ 34      21/ 34      21/ 34  639-666 2417/3860
  BB  MIN-A/R  15/336 MAXSE-A/R  10/462 MAX-A/R  10/498
  PSV QT   33 -1286/  33 - 685 NSY  555 -2573/ 551 -1881

 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   45/ 52      45/ 52      27               897/1254
  BTR   45/ 52      45/ 52      27               989/1254
  GUDP  45/ 52      45/ 52      27               897/1254
  BTRP  45/ 52      45/ 52      27               989/1254

 SNI    43/ 45     DD  45       PSV    1 -   1    CDC 1015 CDM 1222
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OASP/FOTS 81032700Z MO/ 19.2/1519/   17/ 19.2/1520,   18/ 19.2/1520
   40/ 18.2/1517,   60/ 17.5/1515,   89/ 17.0/1514,  120/ 17.0/1515
  150/ 16.8/1515,  191/ 16.4/1514,  300/ 15.6/1514,  400/ 14.1/1510
  510/ 12.0/1505,  600/  9.1/1496,  700/  6.6/1488,  800/  5.0/1483
  900/  4.4/1482, 1200/  3.2/1483, 1600/  2.5/1487, 1900/  2.1/1490
 2400/  1.8/1497, 3475/  1.6/1515, 4000/  1.6/1524, 6000/  1.6/1561
 6949/  1.6/1578
DRX(3675/ 3273)GR( 2.0)BL(1/1)WH( 1)WS(12)BD(6949)SLD(  18)
DP TGT   79 AVG SVL  1523 POD 50.


 SNA ---12KTS------18KTS------24KTS------------CDC/CDM-
  ALL    13/ 21       1/ 21       1/ 16            853/1286

 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1    6/ 28       6/ 27       6/ 24      -     1279/2573
  MD/2   17/ 22      17/ 22      17/ 22            1226/2573

 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    11/ 28      11/ 28      11/ 26            1358/2573
  BTR    11/ 28      11/ 28      11/ 28  646-648 1887/3216
  PSV OT   17 -  17/  32 -  32 NSY   17 -1930/  33 -1881

 SND ---12KTS------18KTS------24KTS------------CDC/CDM-
  GUD     9/ 28       9/ 27       9/ 23            1279/1930
  BTR     9/ 28       9/ 28       9/ 27            1464/1930

 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 23            1782/3216
  BST    12/ 28      12/ 28      12/ 28  632-660 1993/3216
  BB  MIN-A/R     /    MAXSE-A/R     /    MAX-A/R     /
  PSV OT   17 -  17/  32 -  32 NSY   17 -1286/  33 -1254

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 28            1782/3216
  BST    12/ 28      12/ 28      12/ 28  631-673 1993/3216
  BB  MIN-A/R     /    MAXSE-A/R     /    MAX-A/R     /
  PSV OT   17 -1286/  33 - 677 NSY  441 -2573/ 440 -1881

 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 28            1782/3216
  BST    12/ 28      12/ 28      12/ 28  631-670 1993/3216
  BB  MIN-A/R     /    MAXSE-A/R     /    MAX-A/R     /
  PSV OT   17 - 688/  33 - 664 NSY   17 -1930/  33 -1881

 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    22/ 57      22/ 57      45                814/1254
  BTR    22/ 57      22/ 57      45                914/1254
  GUDP   22/ 57      22/ 56      45                814/1254
  BTDP   22/ 57      22/ 57      45                914/1254

 SNI     22/ 22      DD   5      PSV    1 -   1    CDC  971 CDM 1286
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09SM/FOTS 81032700Z MO/ 18.0/1515/   19/ 18.0/1515.   20/ 18.0/1515
   40/ 12.8/1499.   60/  9.4/1488.   80/  7.1/1480.  120/  4.3/1469
  170/  2.8/1463.  220/  1.9/1460.  300/   .8/1457.  400/   .4/1457
  500/   .3/1458.  600/   .2/1459.  700/   .2/1461. 2195/   .1/1485
DRX(3942/-1748)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(2195)SLD(  20)
DP TGT   81 AVG SVL  1470 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   23/ 17      23/ 15      21/  1            944/ 944

 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1  93/ 23      74/ 23      42/ 22      -    2787/2787
  MD/2  23/ 17      23/ 17      23/ 17           2787/2787

 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   92/ 27      77/ 24      61/ 23           2417/2417
  BTP  139/ 27      94/ 27      94/ 27      -    2998/2998
  PSV QT  218 - 218/  30 -  30 NSY  473 - 473/ 411 - 411

 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   89/ 24      70/ 23      30/ 22           1782/1782
  BTP   95/ 24      94/ 24      74/ 24           2099/2099

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  100/ 28      93/ 28      59/ 23           2998/2998
  BST  174/ 28     141/ 28      96/ 28      -    3210/3210
  BB  MIN-A/R  35/ 42 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV QT  244 - 244/ 210 - 210 NSY  904 - 904/ 626 - 626

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  184/ 28     162/ 28     100/ 28           2998/2998
  BST  193/ 28     193/ 28     170/ 28      -    3210/3210
  BB  MIN-A/R  15/ 88 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV QT  682 - 682/ 440 - 440 NSY 1464 -1464/1015 -1015

 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  179/ 28     175/ 28     161/ 28           2998/2998
  BST  193/ 28     193/ 28     193/ 28      -    3210/3210
  BB  MIN-A/R  15/ 88 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV QT  672 - 672/ 417 - 417 NSY 1358 -1358/1015 -1015

 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   17/ 21      15/ 16      45               729/ 729
  BTP   17/ 21      17/ 21      45               831/ 831
  GUDP  17/ 21      10/  9      45               729/ 729
  BTPP  17/ 21      16/ 19      45               831/ 831

 SNT    23/ 17      DD   5       PSV    7 -   7    CDC 1015 CDM 1015
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SRFA/FOTS 81032700Z MO/ 10.4/1492/   28/ 10.4/1492.   29/ 10.4/1492
   60/  8.9/1487.   30/  8.8/1487.  182/  8.8/1489
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 182)SLD(  29)
DP TGT   90 AVG SVL  1488 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1            464/ 464

 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1 105/ 47      90/ 47      81/ 47      -     772/ 772
  MD/2   1/  1       1/  1       1/  1            766/ 766

 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  112/ 85      95/ 64      88/ 59            712/ 712
  BTR  163/120     144/ 95     126/ 92      -     843/ 843
  PSV OT  112 - 112/  82 -  82 NSY  321 - 321/ 249 - 249

 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   95/ 60      88/ 59      76/ 51            574/ 574
  BTR  122/ 91      99/ 60      89/ 59            652/ 652

 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  151/ 98     101/ 66      74/ 49            919/ 919
  BST  193/147     161/102      99/ 64      -     954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV OT  152 - 152/ 104 - 104 NSY  373 - 373/ 295 - 295

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  199/152     177/129     143/ 95            919/ 919
  BST  263/204     228/164     180/138     -      954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV OT  274 - 274/ 212 - 212 NSY  550 - 550/ 444 - 444

 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  194/148     189/145     178/131           919/ 919
  BST  254/182     245/179     230/166     -     954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV OT  266 - 266/ 191 - 191 NSY  535 - 535/ 437 - 437

 SNH ---12KTS------18KTS------TD-------------CDC/CDM-
  GUD   17/167      17/130      25              397/ 397
  BTR   17/184      17/167      25              424/ 424
  GUDP  48/188      48/122      20              408/ 408
  BTDP  48/197      48/186      20              429/ 429

 SNI    50/121     DD  20       PSV   11 -  11    CDC  386 CDM  386
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SBWI/FOTS 81032700Z MO/  5.5/1473/   19/  5.5/1473.   20/  5.5/1473
   40/  5.8/1475.   60/  5.6/1474.  182/  5.6/1477
ORX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 182)SLD(  40)
OP TGT  101 AVG SVL  1475 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL    1/  1      1/  1      1/  1           482/ 487

 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1  64/ 84     64/ 84     54/ 84      -     941/ 974
  MD/2   1/ 84      1/ 84      1/ 83            938/ 974

 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  112/ 84    111/ 84    108/ 84           900/ 974
  BTR  201/193    122/187    118/177     -    1120/1169
  PSV OT   75 - 194/ 182 - 182 NSY  509 - 779/ 579 - 777

 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD  111/ 84    107/ 84     48/ 84           682/ 682
  BTR  120/119    112/ 84    108/ 84           753/ 779

 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  121/188    112/ 84     40/ 84          1266/1266
  BST  217/200    122/191    111/ 84     -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV OT  145 - 194/ 188 - 188 NSY  438 - 682/ 483 - 647

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  221/201    210/198    119/185          1266/1266
  BST  311/218    232/218    213/199     -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV OT  321 - 487/ 375 - 518 NSY  703 - 974/ 778 -1036

 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  218/200    215/200    211/198          1266/1266
  BST  308/218    305/218    232/218     -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV OT  315 - 487/ 313 - 388 NSY  692 - 974/ 723 -1036

 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   39/128     87/ 86     25               488/ 488
  BTR   89/161     89/ 89     25               488/ 488
  GUDR  95/130     90/ 78     20               487/ 487
  BTDR  95/145     94/ 87     20               487/ 487

 SNT    99/ 72     DD  20      PSV    1 -   1    CDC  487 CDM  487
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AOSP/FOTS 81032700Z MO/ 17.8/1519/   19/ 17.8/1519,   20/ 17.8/1519
   60/ 14.9/1511,  100/ 13.8/1508,  120/ 13.5/1508,  150/ 13.5/1508
  300/ 13.8/1513,  400/ 13.7/1514,  500/ 13.7/1516,  560/ 13.6/1516
  600/ 13.5/1517,  900/ 13.0/1520, 1100/ 13.0/1523, 2700/ 13.0/1550
DRX(   0/    0)GR( 2.0)BL(1/1)WH( 1)WS(13)BD(2700)SLD(  20)
OP TGT   81 AVG SVL  1528 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   22/ 17      22/ 17      21/ 14          1014/1014

 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1  33/ 23      33/ 23      32/ 23      -   2029/2029
  MD/2  23/ 17      23/ 17      23/ 17          2029/2029

 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUID   74/ 28      64/ 26      46/ 23          2029/2029
  BTP   109/ 28      97/ 28      84/ 28      -   2368/2368
  PSV OT   66 -  66/  32 -  32 NSY  995 -1417/ 727 -1288

 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUID   69/ 26      51/ 23      25/ 23          1691/1691
  BTP    88/ 26      69/ 26      55/ 24          1691/1691

 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUID   99/ 28      71/ 28      26/ 23          2368/2368
  BST  136/ 28     106/ 28      67/ 27      -   2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/271 MAX-A/R  15/289
  PSV OT   50 -  50/  32 -  32 NSY  986 -1063/ 724 - 966

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUID  143/ 28     123/ 28      94/ 28          2368/2368
  BST   183/ 28     164/ 28     131/ 28      -   2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/338 MAX-A/R  15/367
  PSV OT  708 - 708/ 644 - 644 NSY 1570 -1771/1358 -1611

 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUID  139/ 28     134/ 28     125/ 28          2368/2368
  BST   179/ 28     175/ 28     165/ 28      -   2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/338 MAX-A/R  15/366
  PSV OT  708 - 708/ 644 - 644 NSY 1570 -1771/1226 -1611

 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUID   17/230     17/187      45               879/ 966
  BTP    17/267     17/226      45               957/ 966
  GUDP   17/190     17/152      45               879/ 966
  BTPP   17/233     17/189      45               957/ 966

 SNI     24/ 18     DD   5      PSV    1 -   1    CDC  966 CDM  966
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02HC/FOTS 81032700Z MO/ 20.7/1523/ 2700/ 13.0/1550,*****/  0.0/****
DRX(NA HALF CH)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(2700)SLD(2700)
DP TGT  305 AVG SVL  1527 POD 50.


SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
 ALL   65/  1     39/  1     25/  1           670/ 670

SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 MD/1 170/124    138/ 97    113/ 70     -    2099/2099
 MD/2 107/  1    102/  1     77/  1          2099/2099

SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  174/125    153/104    120/ 84          1782/1782
 BTR  244/267    216/249    185/237     -    2311/2311
 PSV QT  170 - 170/  92 -  92 NSY  572 - 572/ 733 - 733

SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
 GUD  148/124    119/ 97    101/ 67          1015/1015
 BTR  183/242    155/133    120/100          1358/1358

SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  238/239    184/105    120/ 61          2522/2522
 BST  324/277    268/249    190/112     -    2787/2787
 BB  MIN-A/R  42/ 49 MAXSE-A/R  42/ 71 MAX-A/R  15/301
 PSV QT  241 - 241/ 121 - 121 NSY  669 - 669/ 735 - 735

SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  348/289    305/266    233/237          2522/2522
 BST  435/437    401/430    318/274     -    2787/2787
 BB  MIN-A/R  42/ 49 MAXSE-A/R  25/137 MAX-A/R  15/366
 PSV QT  502 - 502/ 448 - 448 NSY 1015 -1015/1226 -1226

SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  337/282    327/278    303/265          2522/2522
 BST  432/437    428/437    399/429     -    2787/2787
 BB  MIN-A/R  42/ 49 MAXSE-A/R  25/137 MAX-A/R  15/366
 PSV QT  474 - 474/ 435 - 435 NSY  958 - 958/1120 -1120

SNH ---12KTS------18KTS------TD--------------CDC/CDM-
 GUD  167/131    109/101     45               876/ 876
 BTR  181/148    165/124     45               942/ 942
 GUDP 161/116     94/ 86     45               876/ 876
 BTDP 169/138    116/110     45               942/ 942

SNI    86/ 87     DD  45      PSV    1 -   1    CDC  939 CDM  939
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02NG/FOTS 81032700Z MO/ 20.7/1523/  400/ 16.7/1516,*****/  0.0/****
OPX(NA SHALLOW)GR: 2.0)BL(1/1)WH( 1)WS(13)BD( 400)SLD(   0)
OP TGT   61 AVG SVL  1519 POD 50.

SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
 ALL   22/ 21     22/ 21     22/ 21           932/ 932

SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 MD/1 211/223    202/153    193/ 43     -    1676/1676
 MD/2 198/ 19     20/ 19     20/ 19          1676/1676

SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  210/221    204/154    199/148          1279/1279
 BTR  396/333    380/325    372/228     -    1782/1782
 PSV OT  200 - 200/ 153 - 153 NSY  878 - 878/ 855 - 855

SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
 GUD  210/219    201/152    170/ 56           954/ 954
 BTR  378/321    211/224    202/153          1173/1173

SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  380/327    208/214     34/ 53          1993/1993
 BST  391/410    383/331    207/155     -    2205/2205
 BB  MIN-A/R  42/  7 MAXSE-A/R   0/188 MAX-A/R   0/209
 PSV OT  378 - 378/ 220 - 220 NSY  925 - 925/ 934 - 934

SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  392/412    390/403    378/319          1993/1993
 BST  392/414    392/414    391/407     -    2205/2205
 BB  MIN-A/R   0/ 74 MAXSE-A/R   0/188 MAX-A/R   0/209
 PSV OT  879 - 879/ 856 - 856 NSY  932 - 932/ 947 - 947

SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
 GUD  391/410    391/409    390/404          1993/1993
 BST  392/414    392/414    392/414     -    2205/2205
 BB  MIN-A/R   0/ 74 MAXSE-A/R   0/188 MAX-A/R   0/209
 PSV OT  874 - 874/ 683 - 683 NSY  931 - 931/ 947 - 947

SNH ---12KTS------18KTS------TD-------------CDC/CDM-
 GUD  132/159    114/131     45              1226/1226
 BTR  132/167    132/155     45              1358/1358
 GUDP 132/147     51/ 83     45              1226/1226
 BTRP 132/164    129/141     45              1358/1358

SNI    72/ 84     DD  45      PSV    1 -   1    CDC 1358 CDM 1358
```

APPENDIX C

UPDATE CARD IMAGES FOR SHARPS 17.7 (MESSAGE COMPACTION)

```
*ID TITLINE06
*/
*/ PROGRAMMER - R. HOLT, OCEAN DATA SYSTEMS, INC.
*/ DATE - 22 JUN 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ELIMINATE BLANK LINES BETWEEN
*/ SONARS IN THE SHARPS MESSAGE TO REDUCE THE OVERALL MESSAGE LENGTH.
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH IDENT MSGLINE15
*/
*I TITLINE.7
C     *****     LATEST CHANGE 22JUN 82
*D TITLINE03.1
 9001 FORMAT(1X, A4, 3(*----*, A2, *KTS---*), 9(1H-), *COC/COM-*)
*D TITLINE03.2
 9003 FORMAT(1X, A4, 3(*----*, A2, *KTS---*), *--C2W----COC/COM-*)
*D TITLINE05.1
 9007 FORMAT(1X, A4, 2(*----*, A2, *KTS---*), *---ID*, 15(1H-),
*ID MSGLINE16
*/
*/ PROGRAMMER - R. HOLT, OCEAN DATA SYSTEMS, INC.
*/ DATE - 22 JUN 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ELIMINATE BLANK LINES BETWEEN
*/ SONARS IN THE SHARPS MESSAGE TO REDUCE THE OVERALL MESSAGE LENGTH.
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH IDENT TITLINE06
*/
*D MSGLINE15.1
C     *****     LATEST CHANGE 22JUN 82
*D MSGLINE10.1
 9009 FORMAT(1X, A3, 3X, A3, 1H/, A3, 5X, *DD *, I3, 6X, *PSV *,
```

APPENDIX D

SAMPLE SHARPS 18.0 OUTPUT

```
 SHARPS III PREDICTION BASED ON 10 11Z SEP 82 DATA

01SP/EOTS 81032700Z M0/ 17.5/1513/   32/ 17.5/1514,   34/ 17.5/1514
   90/ 16.0/1510,  140/ 13.9/1504,  180/ 12.2/1499,  200/ 11.5/1497
  240/ 10.4/1494,  300/  9.0/1491,  400/  7.9/1488,  500/  7.0/1487
  800/  5.2/1484, 1200/  3.9/1486, 2000/  2.4/1493, 2200/  2.2/1496
 3000/  2.0/1509, 4000/  1.9/1526, 4206/  1.9/1529
0RX(3260/  943)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(4206)SLD(  34)
0P TGT   95 AVG SVL  1501 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   23/ 32      22/ 24       1/ 12           922/1190
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  M0/1 100/ 39      74/ 39      32/ 39     -    2099/3571
  M0/2  23/ 28      23/ 28      23/ 28          2099/3571
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   99/ 43      77/ 41      34/ 39          1887/2976
  BTR  145/ 44     127/ 44     110/ 44  591-604 2417/3571
  PSV OT   66 -  66/  45 -  45 NSY  237 -2380/  49 -2316
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   96/ 44      42/ 40      30/ 38          1570/2380
  BTR  123/ 44     101/ 44      74/ 40          1887/2380
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  130/ 45      99/ 44      34/ 39          2417/3571
  BST  180/ 45     147/ 45     107/ 45  588-615 2628/4166
  BB  MIN-A/R  35/110 MAXSE-A/R  20/255 MAX-A/R  15/365
  PSV OT  121 - 604/  48 - 583 NSY  296 -1785/ 408 -1737
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  192/ 45     168/ 45     127/ 45          2417/3571
  BST  246/ 45     222/ 45     177/ 45  588-640 2628/4166
  BB  MIN-A/R  35/110 MAXSE-A/R  10/421 MAX-A/R  10/543
  PSV OT  234 -1190/  49 -1158 NSY  550 -2976/ 546 -2895
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  186/ 45     181/ 45     167/ 45          2417/3571
  BST  240/ 45     235/ 45     221/ 45  588-636 2628/4166
  BB  MIN-A/R  35/110 MAXSE-A/R  10/407 MAX-A/R  10/530
  PSV OT  219 -1190/  49 -1158 NSY  538 -2976/ 540 -2895
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   28/ 34      28/ 34      45              864/ 864
  BTR   28/ 34      28/ 34      45              946/1158
  GUDP  28/ 34      28/ 34      45              864/ 864
  BTDP  28/ 34      28/ 34      45              946/1158
 SNT    23/ 34      DU   6       PSV    1 -   1    CDC 1067 CDM 1190
```

```
05FA/FOTS 81032700Z MO/ 20.7/1523/   81/ 18.5/1518,  101/ 17.6/1516
  121/ 17.0/1514,  140/ 16.0/1512,  160/ 14.9/1509,  199/ 13.5/1505
  300/ 11.3/1499,  400/  9.5/1494,  600/  5.6/1482,  650/  5.2/1481
  700/  4.8/1481,  800/  4.1/1479, 1400/  2.6/1484, 1800/  2.1/1489
 2100/  2.0/1493, 2600/  1.8/1501, 3000/  1.5/1507, 5121/  1.5/1544
OPX(3937/ 1183)GR( 2.0)BL(1/1)WH( 1)WS(13)BD(5121)SLD(   0)
OP TGT / 61 AVG SVL  1506 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   23/ 34      23/ 31      22/ 22           942/1286
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1  11/ 34      11/ 34      11/ 34     -    1993/3216
  MD/2  23/ 28      23/ 28      23/ 28          1993/3216
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   15/ 34      15/ 34      15/ 34          1358/2509
  BTR   17/ 34      17/ 34      17/ 34  635-646 1782/3136
  PSV QT   32 -  32/  32 -  32 NSY   33 -1930/  33 -1881
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   12/ 34      12/ 34      12/ 34          1067/1881
  BTR   12/ 34      12/ 34      12/ 34          1358/2509
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   23/ 34      23/ 34      23/ 34          2205/3216
  BST   21/ 34      21/ 34      21/ 34     -    2417/3860
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV QT   33 - 657/  33 -  33 NSY   33 -1930/  33 -1254
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   23/ 34      23/ 34      23/ 34          2205/3216
  BST   21/ 34      21/ 34      21/ 34  639-668 2417/3860
  BB  MIN-A/R  15/336 MAXSE-A/R  10/462 MAX-A/R  10/517
  PSV QT   33 -1286/  33 -1254 NSY  575 -2573/ 584 -2509
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   23/ 34      23/ 34      23/ 34          2205/3216
  BST   21/ 34      21/ 34      21/ 34  639-666 2417/3860
  BB  MIN-A/R  15/336 MAXSE-A/R  10/462 MAX-A/R  10/498
  PSV QT   33 -1286/  33 - 685 NSY  555 -2573/ 551 -1881
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   45/ 52      45/ 52      27              897/1254
  BTR   45/ 52      45/ 52      27              989/1254
  GUDP  45/ 52      45/ 52      27              897/1254
  BTDP  45/ 52      45/ 52      27              989/1254
 SNI    43/ 45      DD  45       PSV    1 -   1    CDC 1015 CDM 1222
```

```
08SE/FOTS 81032700Z M0/ 19.2/1519/   17/ 19.2/1520,   18/ 19.2/1520
   40/ 18.2/1517,   60/ 17.5/1515,   89/ 17.0/1514,  120/ 17.0/1515
  150/ 16.8/1515,  191/ 16.4/1514,  300/ 15.6/1514,  400/ 14.1/1510
  510/ 12.0/1505,  600/  9.1/1496,  700/  6.6/1488,  800/  5.0/1483
  900/  4.4/1482, 1200/  3.2/1483, 1600/  2.5/1487, 1900/  2.1/1490
 2400/  1.8/1497, 3475/  1.6/1515, 4000/  1.6/1524, 6000/  1.6/1561
 6949/  1.6/1578
DRX(3675/ 3273)GR( 2.0)BL(1/1)WH( 1)WS(12)BD(6949)SLD(  18)
DP TGT   79 AVG SVL  1523 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL    13/ 21       1/ 21       1/ 16            853/1286
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1    6/ 28       6/ 27       6/ 24      -    1279/2573
  MD/2   17/ 22      17/ 22      17/ 22           1226/2573
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    11/ 28      11/ 28      11/ 26           1358/2573
  BTR    11/ 28      11/ 28      11/ 28  646-648 1887/3216
  PSV QT   17 -  17/  32 -  32 NSY   17 -1930/  33 -1881
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD     9/ 28       9/ 27       9/ 23           1279/1930
  BTR     9/ 28       9/ 28       9/ 27           1464/1930
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 23           1782/3216
  BST    12/ 28      12/ 28      12/ 28  632-660 1993/3216
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV QT   17 -  17/  32 -  32 NSY   17 -1286/  33 -1254
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 28           1782/3216
  BST    12/ 28      12/ 28      12/ 28  631-673 1993/3216
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV QT   17 -1286/  33 - 677 NSY  441 -2573/ 440 -1881
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 28           1782/3216
  BST    12/ 28      12/ 28      12/ 28  631-670 1993/3216
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV QT   17 - 688/  33 - 664 NSY   17 -1930/  33 -1881
 SNP ---12KTS------18KTS------TD-------------CDC/CDM-
  GUD    22/ 57      22/ 57      45               814/1254
  BTR    22/ 57      22/ 57      45               914/1254
  GUDP   22/ 57      22/ 56      45               814/1254
  BTPP   22/ 57      22/ 57      45               914/1254
 SNI     22/ 22      DU   5       PSV    1 -   1    CDC  971 CDM 1286
```

```
09SM/FOTS 81032700Z MO/ 18.0/1515/   19/ 18.0/1515,   20/ 18.0/1515
   40/ 12.8/1499,   60/  9.4/1488,   80/  7.1/1480,  120/  4.3/1469
  170/  2.8/1463,  220/  1.9/1460,  300/   .8/1457,  400/   .4/1457
  500/   .3/1458,  600/   .2/1459,  700/   .2/1461, 2195/   .1/1485
DRX(3942/-1748)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(2195)SLD(  20)
DP TGT   81 AVG SVL  1470 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   23/ 17      23/ 15      21/  1            944/ 944
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1  93/ 23      74/ 23      42/ 22      -    2787/2787
  MD/2  23/ 17      23/ 17      23/ 17           2787/2787
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   92/ 27      77/ 24      61/ 23           2417/2417
  BTR  139/ 27      94/ 27      94/ 27      -    2998/2998
  PSV OT  218 - 218/  30 -  30 NSY  473 - 473/ 411 - 411
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   89/ 24      70/ 23      30/ 22           1782/1782
  BTR   95/ 24      94/ 24      74/ 24           2099/2099
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  10?/ 28      93/ 28      59/ 23           2998/2998
  BST  174/ 28     141/ 28      96/ 28      -    3210/3210
  BB  MIN-A/R  35/ 42 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV OT  244 - 244/ 210 - 210 NSY  904 - 904/ 626 - 626
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  184/ 28     162/ 28     100/ 28           2998/2998
  BST  193/ 28     193/ 28     170/ 28      -    3210/3210
  BB  MIN-A/R  15/ 88 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV OT  682 - 682/ 440 - 440 NSY 1464 -1464/1015 -1015
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  179/ 28     175/ 28     161/ 28           2998/2998
  BST  193/ 28     193/ 28     193/ 28      -    3210/3210
  BB  MIN-A/R  15/ 88 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV OT  672 - 672/ 417 - 417 NSY 1358 -1358/1015 -1015
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   17/ 21      15/ 16      45               729/ 729
  BTR   17/ 21      17/ 21      45               831/ 831
  GUDD  17/ 21      10/  9      45               729/ 729
  BTDD  17/ 21      16/ 19      45               831/ 831
 SNI    23/ 17      DD   5       PSV    7 -   7    CDC 1015 CDM 1015
```

```
58FA/FOTS 81032700Z MO/ 10.4/1492/   28/ 10.4/1492,   29/ 10.4/1492
   60/  8.9/1487,   80/  8.8/1487,  182/  8.8/1489
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 182)SLD(  29)
DP TGT   90 AVG SVL  1488 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1           464/ 464
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1 105/ 47      90/ 47      81/ 47      -     772/ 772
  MD/2   1/  1       1/  1       1/  1           766/ 766
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  112/ 85      95/ 64      88/ 59           712/ 712
  BTR  163/120     144/ 95     126/ 92      -    843/ 843
  PSV OT  112 - 112/  82 -  82 NSY  321 - 321/ 249 - 249
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   95/ 60      88/ 59      76/ 51           574/ 574
  BTR  122/ 91      99/ 60      89/ 59           652/ 652
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  151/ 98     101/ 66      74/ 49           919/ 919
  BST  193/147     161/102      99/ 64      -    954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV OT  152 - 152/ 104 - 104 NSY  373 - 373/ 295 - 295
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  199/152     177/129     143/ 95           919/ 919
  BST  263/204     228/164     180/138      -    954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV OT  274 - 274/ 212 - 212 NSY  550 - 550/ 444 - 444
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  194/148     189/145     178/131           919/ 919
  BST  254/182     245/179     230/166      -    954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV OT  266 - 266/ 191 - 191 NSY  535 - 535/ 437 - 437
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   17/167      17/130      25               397/ 397
  BTR   17/184      17/167      25               424/ 424
  GUDP  48/188      48/122      20               408/ 408
  BTRP  48/197      48/186      20               429/ 429
 SNI    50/121     DD  20       PSV   11 -  11    CDC  386 CDM  386
```

```
58WI/EOTS 81032700Z MO/  5.5/1473/   19/  5.5/1473.   20/  5.5/1473
   40/  5.8/1475.   60/  5.6/1474.  182/  5.6/1477
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 182)SLD(  40)
DP TGT  101 AVG SVL  1475 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1           482/ 487
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1   64/ 84      64/ 84      54/ 84      -     941/ 974
  MD/2    1/ 84       1/ 84       1/ 83           938/ 974
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   112/ 84     111/ 84     108/ 84           900/ 974
  BTR  201/193     122/187     118/177     -    1120/1169
  PSV QT   75 - 194/ 182 - 182 NSY  509 - 779/ 579 - 777
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   111/ 84     107/ 84      48/ 84           682/ 682
  BTR  120/119     112/ 84     108/ 84           753/ 779
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   121/188     112/ 84      40/ 84          1266/1266
  BST   217/200     122/191     111/ 84     -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV QT  145 - 194/ 188 - 188 NSY  438 - 682/ 483 - 647
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   221/201     210/198     119/185          1266/1266
  BST   311/218     232/218     213/199     -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV QT  321 - 487/ 375 - 518 NSY  703 - 974/ 778 -1036
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   218/200     215/200     211/198          1266/1266
  BST   308/218     305/218     232/218     -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV QT  315 - 487/ 313 - 388 NSY  692 - 974/ 723 -1036
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    89/128      87/ 86      25               488/ 488
  BTR    89/161      89/ 89      25               488/ 488
  GUDP   95/130      90/ 78      20               487/ 487
  BTRP   95/145      94/ 87      20               487/ 487
 SNI     89/ 72      DD  20       PSV    1 -   1    CDC  487 CDM  487
```

```
60SP/FOTS 810327002 MO/ 17.8/1519/   19/ 17.8/1519,   20/ 17.8/1519
   60/ 14.9/1511,  100/ 13.8/1508,  120/ 13.5/1508,  150/ 13.5/1508
  300/ 13.8/1513,  400/ 13.7/1514,  500/ 13.7/1516,  560/ 13.6/1516
  600/ 13.5/1517,  900/ 13.0/1520, 1100/ 13.0/1523, 2700/ 13.0/1550
DRX(   0/    0)GR( 2.0)BL(1/1)WH( 1)WS(13)BD(2700)SLD(  20)
DP TGT   81 AVG SVL  1528 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   22/ 17     22/ 17     21/ 14          1014/1014
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1  33/ 23     33/ 23     32/ 23      -    2029/2029
  MD/2  23/ 17     23/ 17     23/ 17          2029/2029
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   74/ 28     64/ 26     46/ 23          2029/2029
  BTR  109/ 28     97/ 28     84/ 28      -    2368/2368
  PSV OT   66 -  66/  32 -  32 NSY  995 -1417/ 727 -1288
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   69/ 26     51/ 23     25/ 23          1691/1691
  BTR   88/ 26     69/ 26     55/ 24          1691/1691
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   99/ 28     71/ 28     26/ 23          2368/2368
  BST  136/ 28    106/ 28     67/ 27      -    2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/271 MAX-A/R  15/289
  PSV OT   50 -  50/  32 -  32 NSY  986 -1063/ 724 - 966
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  143/ 28    123/ 28     94/ 28          2368/2368
  BST  183/ 28    164/ 28    131/ 28      -    2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/338 MAX-A/R  15/367
  PSV OT  708 - 708/ 644 - 644 NSY 1570 -1771/1358 -1611
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  138/ 28    134/ 28    125/ 28          2368/2368
  BST  178/ 28    175/ 28    165/ 28      -    2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/338 MAX-A/R  15/366
  PSV OT  708 - 708/ 644 - 644 NSY 1570 -1771/1226 -1611
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   17/230     17/187     45               879/ 966
  BTR   17/267     17/226     45               957/ 966
  GUDP  17/190     17/152     45               879/ 966
  BTDP  17/233     17/189     45               957/ 966
 SNT    24/ 18     DD   5      PSV    1 -   1    CDC  966 CDM  966
```

```
02HC/EOTS 810327002 M0/ 20.7/1523/ 2700/ 13.0/1550,*****/  0.0/****
DRX(NA HALF CH)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(2700)SLD(2700)
OP TGT  305 AVG SVL  1527 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   65/  1      39/  1      25/  1          670/ 670
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1 170/124     138/ 97     113/ 70      -   2099/2099
  MD/2 107/  1     102/  1      77/  1          2099/2099
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUN  174/125     153/104     120/ 84          1782/1782
  BTR  244/267     216/249     185/237      -   2311/2311
  PSV QT  170 - 170/  92 -  92 NSY  572 - 572/ 733 - 733
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUN  148/124     119/ 97     101/ 67          1015/1015
  BTR  183/242     155/133     120/100          1358/1358
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUN  238/239     184/105     120/ 61          2522/2522
  BST  324/277     268/249     190/112      -   2787/2787
  BB  MIN-A/R  42/ 49 MAXSE-A/R  42/ 71 MAX-A/R  15/301
  PSV QT  241 - 241/ 121 - 121 NSY  669 - 669/ 735 - 735
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUN  348/289     305/266     233/237          2522/2522
  BST  435/437     401/430     318/274      -   2787/2787
  BB  MIN-A/R  42/ 49 MAXSE-A/R  25/137 MAX-A/R  15/366
  PSV QT  502 - 502/ 448 - 448 NSY 1015 -1015/1226 -1226
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUN  337/282     327/278     303/265          2522/2522
  BST  432/437     428/437     399/429      -   2787/2787
  BB  MIN-A/R  42/ 49 MAXSE-A/R  25/137 MAX-A/R  15/366
  PSV QT  474 - 474/ 435 - 435 NSY  958 - 958/1120 -1120
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUN  167/131     109/101      45              876/ 876
  BTR  181/148     165/124      45              942/ 942
  GUNP 161/116      94/ 86      45              876/ 876
  BTRP 169/138     116/110      45              942/ 942
 SNI    86/ 87     DD  45      PSV    1 -  1    CDC  939 CDM  939
```

```
[illegible]/FOTS [illegible]/ [illegible]/ 20.7/1523/  400/ 16.7/1516,*****/  0.0/****
[illegible] SH[illegible] [illegible] [illegible](1/1)WH( 1)WS(1 )BD( 400)SLD(   0)
DP TGT   61      SVL  1519 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  [illegible] 22/ 2      2 / 21      22/ 21            932/ 932
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  M0/1 211/223    2 /153    193/ 43      -    1670/1676
  M0/2 198/ 19    20/ 19     20/ 19           1676/1676
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  210/221    204/154    199/148          1279/1279
  BTR  386/333    380/325    372/228      -   1782/1782
  PSV OT  200 - 200/ 153 - 153 NSY  878 - 878/ 855 - 855
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD  219/219    201/152    170/ 56           954/ 954
  BTR  378/321    211/224    202/153          1173/1173
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  [illegible]/327    [illegible]/214     34/ 53          1993/1993
  BST  391/410    [illegible]/331    207/155      -   2205/2205
  BB  MIN-A/R  42/  7 MAXSE-A/R   0/188 MAX-A/R   0/209
  PSV OT  378 - 378/ 220 - 220 NSY  925 - 925/ 934 - 934
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  392/412    390/403    378/319          1993/1993
  BST  392/414    392/414    391/407      -   2205/2205
  BB  MIN-A/R   0/ 74 MAXSE-A/R   0/188 MAX-A/R   0/209
  PSV OT  879 - 879/ 856 - 856 NSY  932 - 932/ 947 - 947
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  391/410    391/409    390/404          1993/1993
  BST  392/414    392/414    392/414      -   2205/2205
  BB  MIN-A/R   0/ 74 MAXSE-A/R   0/188 MAX-A/R   0/209
  PSV OT  874 - 874/ 683 - 683 NSY  931 - [illegible]/ 947 - 947
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD  132/155    114/131     45              1226/1226
  BTR  132/167    132/155     45              1358/1358
  GUDP 132/147     51/ 83     45              1226/1226
  BTRP 132/154    129/141     45              1358/1358
 SNI    [illegible]/ 84     DC  45      PSV    1 -  1     CDC 1358 CDM 1358
```

APPENDIX E

SAMPLE PREPROCESSOR INPUT FOR ACTIVE SONOBUOYS

```
24
10 SRA ASBY-A SHAL          1 2 1A BL 1 00          1 DIRECT  11  2 10  1
10 SRA ASBY-A SHAL          2 1 1A    1 00          1 CD      11  2 10  1
10 SRA ASBY-A DEEP          3 2 1A BL 1 00          1 DIRECT  11  3 10  1
10 SRA ASBY-A DEEP          4 1 1A    1 00          1 CD      11  3 10  1
10 SRB ASBY-B SHAL          5 2 1B BL 1 00          2 DIRECT  13  5 12  4
10 SRB ASBY-B SHAL          6 2 1A BL 1 00          2 DIRECT  13  5 12  4
10 SRB ASBY-B SHAL          7 2 1B BL 1 00          2 DIRECT  13  5 12  4
10 SRB ASBY-B SHAL          8 2 1B BL 1 00          2 DIRECT  13  5 12  4
10 SRB ASBY-B SHAL          9 1 1A    1 00          2 CD      13  5 12  4
10 SRB ASBY-B DEEP         10 2 1B BL 1 00          2 DIRECT  13  6 12  4
10 SRB ASBY-B DEEP         11 2 1B BL 1 00          2 DIRECT  13  6 12  4
10 SRB ASBY-B DEEP         12 2 1B BL 1 00          2 DIRECT  13  6 12  4
10 SRB ASBY-B DEEP         13 2 1A BL 1 00          2 DIRECT  13  6 12  4
10 SRB ASBY-B DEEP         14 1 1B    1 00          2 CD      13  6 12  4
10 SRC ASBY-C SHAL         15 2 1A BL 1 00          2 DIRECT  13  8 12  7
10 SRC ASBY-C SHAL         16 2 1A BL 1 00          2 DIRECT  13  8 12  7
10 SRC ASBY-C SHAL         17 2 1B BL 1 00          2 DIRECT  13  8 12  7
10 SRC ASBY-C SHAL         18 2 1A BL 1 00          2 DIRECT  13  8 12  7
10 SRC ASBY-C SHAL         19 1 1B    1 00          2 CD      13  8 12  7
10 SRC ASBY-C DEEP         20 2 1A BL 1 00          2 DIRECT  13  9 12  7
10 SRC ASBY-C DEEP         21 2 1A BL 1 00          2 DIRECT  13  9 12  7
10 SRC ASBY-C DEEP         22 2 1B BL 1 00          2 DIRECT  13  9 12  7
10 SRC ASBY-C DEEP         23 2 1B BL 1 00          2 DIRECT  13  9 12  7
10 SRC ASBY-C DEEP         24 1 1B    1 00          2 CD      13  9 12  7
21  10475 14.0 1  0  0 22.0 22.0 360. .100 180.0-4.014.
21  20475 14.0 1  0  0 22.0           .100 180.0  25
21  30475 14.0 1  0  0 22.0 22.0 360. .100 180.0-4.014.0
21  40475 14.0 1  0  0 22.0           .100 180.0  25
21  50505  9.0 1  0  0 27.0 27.0 360. 1.00 210.0-13.-99.
21  60505  9.0 1  0  0 27.0 27.0 360. .500 210.0-10.-99.
21  70505  9.0 1  0  0 27.0 27.0 360. .100 210.0-3.0-99.
21  80505  9.0 1  0  0 27.0 27.0 360. 1.00 210.0-5.0-5.0
21  90505  9.0 1  0  0 27.0           1.00 210.0  25
21 100500  9.0 1  0  0 27.0 27.0 360. 1.00 210.0-13.-99.
21 110500  9.0 1  0  0 27.0 27.0 360. .500 210.0-10.-99.
21 120500  9.0 1  0  0 27.0 27.0 360. .100 210.0-3.0-99.
21 130500  9.0 1  0  0 27.0 27.0 360. 1.00 210.0-5.0-5.0
21 140500  9.0 1  0  0 27.0           1.00 210.0  25
21 150625  9.0 1  0  0 27.0 27.0 360. 1.00 210.0-15.-99.
21 160625  9.0 1  0  0 27.0 27.0 360. .500 210.0-13.-99.
21 170625  9.0 1  0  0 27.0 27.0 360. .100 210.0-6.0-99.
21 180625  9.0 1  0  0 27.0 27.0 360. 1.00 210.0-10.-10.
21 190625  9.0 1  0  0 27.0           1.00 210.0  25
21 200620  9.0 1  0  0 27.0 27.0 360. 1.00 210.0-15.-99.
21 210620  9.0 1  0  0 27.0 27.0 360. .500 210.0-13.-99.
21 220620  9.0 1  0  0 27.0 27.0 360. .100 210.0-6.0-99.
21 230620  9.0 1  0  0 27.0 27.0 360. 1.00 210.0-10.-10.
21 240620  9.0 1  0  0 27.0           1.00 210.0  25
30  1  1 01 590 620 650 680 700  -5
30  2  1 01 650 690 720 750 770  -5
```

APPENDIX F

SAMPLE PREPROCESSOR OUTPUT FOR ACTIVE SONOBUOYS

TITLE ARRAYS

SONTYP	SPEEDS	NO.	FORMAT
SBA		1	10
SBB		4	12
SBC		7	12

LINE ARRAYS

LNMODE	KLO	KHI	MLIND	NOTITLE	MTYPE
	1	4	2	1	11
	5	8	3	1	11
	9	18	5	2	13
	19	28	6	2	13
	29	38	8	3	13
	39	48	9	3	13

SELF-NOISE TABLE DIRECTORY

TABLE NO.	STARTING INDEX	NO ENTRIES
1	1	1
2	2	1

COMPOSITE SELF-NOISE TABLE

INDEX	SPEED	NOISE BY SEA STATE				
		1	2	3	4	5
1	1.	59.	62.	65.	68.	78.
2	1.	65.	69.	72.	75.	77.

NO. OF DISTINCT SONAR DEPTHS = 3

CODE	MAX BB ANG.
40000	27.000000
42000	22.000000
43000	27.000000

SORTED SONAR DESCRIPTION TABLE

	ZSON	ZTGT	PATH	FREQ	XDPANG	XVBMWD	RDPANG	RVAMWD	PULEN	TYPE	NSPTR	SPEED	SRCLEV	RDNN	RDNR	EMBMWD	NOHVB	IROUT OUTPUT		NDCHG	SVSCOD
1	40000.	0.	1	9.0	0.	27.00	0.	27.00	1.000	401	2	0	210.0	-10.	-10.	360.00	-3	-3	****	1	**
2	40000.	0.	1	9.0	0.	27.00	0.	27.00	1.000	401	2	0	210.0	-5.	-5.	360.00	-3	-3	****	14	**
3	40000.	0.	1	14.0	0.	22.00	0.	22.00	.100	401	1	0	180.0	-4.	14.	360.00	-1	-1	****	4	**
4	40000.	18.	1	9.0	0.	27.00	0.	0.00	1.000	310	2	0	210.0	25.	0.	0.00	-3	13	37	2	3
5	40000.	18.	1	9.0	0.	27.00	0.	0.00	1.000	310	2	0	210.0	25.	0.	0.00	-3	13	17	17	2
6	40000.	18.	1	9.0	0.	27.00	0.	0.00	1.000	320	2	0	210.0	25.	0.	0.00	-3	13	38	10	3
7	40000.	18.	1	9.0	0.	27.00	0.	0.00	1.000	320	2	0	210.0	25.	0.	0.00	-3	13	18	17	2
8	40000.	18.	1	14.0	0.	22.00	0.	0.00	.100	310	1	0	180.0	25.	0.	0.00	-1	3	3	4	1
9	40000.	18.	1	14.0	0.	22.00	0.	0.00	.100	320	1	0	180.0	25.	0.	0.00	-1	3	4	10	1
10	40000.	18.	2	9.0	0.	27.00	0.	27.00	.100	110	2	0	210.0	-6.	-99.	360.00	-4	11	33	3	3
11	40000.	18.	2	9.0	0.	27.00	0.	27.00	.100	110	2	0	210.0	-3.	-99.	360.00	-2	11	13	14	2
12	40000.	18.	2	9.0	0.	27.00	0.	27.00	.500	110	2	0	210.0	-13.	-99.	360.00	-4	9	31	9	3
13	40000.	18.	2	9.0	0.	27.00	0.	27.00	.500	110	2	0	210.0	-10.	-99.	360.00	-2	9	11	14	2
14	40000.	18.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-15.	-99.	360.00	-4	7	29	9	3
15	40000.	18.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-13.	-99.	360.00	-2	7	9	14	2
16	40000.	18.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-10.	-10.	360.00	-3	7	35	14	3
17	40000.	18.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-5.	-5.	360.00	-3	7	15	14	2
18	40000.	18.	2	14.0	0.	22.00	0.	22.00	.100	110	1	0	180.0	-4.	14.	360.00	-1	1	1	4	1
19	40000.	100.	1	9.0	0.	27.00	0.	27.00	1.000	402	2	0	210.0	-10.	-10.	360.00	-3	-3	****	2	**
20	40000.	100.	1	9.0	0.	27.00	0.	27.00	1.000	402	2	0	210.0	-5.	-5.	360.00	-3	-3	****	14	**
21	40000.	100.	1	14.0	0.	22.00	0.	22.00	.100	402	1	0	180.0	-4.	14.	360.00	-1	-1	****	4	**
22	40000.	1000.	1	9.0	0.	27.00	0.	27.00	1.000	403	2	0	210.0	-10.	-10.	360.00	-3	-3	****	2	**
23	40000.	1000.	1	9.0	0.	27.00	0.	27.00	1.000	403	2	0	210.0	-5.	-5.	360.00	-3	-3	****	14	**
24	40000.	1000.	1	14.0	0.	22.00	0.	22.00	.100	403	1	0	180.0	-4.	14.	360.00	-1	-1	****	4	**
25	40000.	30000.	2	9.0	0.	27.00	0.	27.00	.100	110	2	0	210.0	-6.	-99.	360.00	-4	12	34	2	3
26	40000.	30000.	2	9.0	0.	27.00	0.	27.00	.100	110	2	0	210.0	-3.	-99.	360.00	-2	12	14	14	2
27	40000.	30000.	2	9.0	0.	27.00	0.	27.00	.500	110	2	0	210.0	-13.	-99.	360.00	-4	10	32	9	3
28	40000.	30000.	2	9.0	0.	27.00	0.	27.00	.500	110	2	0	210.0	-10.	-99.	360.00	-2	10	12	14	2
29	40000.	30000.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-15.	-99.	360.00	-4	8	30	9	3
30	40000.	30000.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-13.	-99.	360.00	-2	8	10	14	2
31	40000.	30000.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-10.	-10.	360.00	-3	8	36	14	3
32	40000.	30000.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-5.	-5.	360.00	-3	8	16	14	2
33	40000.	30000.	2	14.0	0.	22.00	0.	22.00	.100	110	1	0	180.0	-4.	14.	360.00	-1	2	2	4	1
34	40000.	100000.	1	9.0	0.	27.00	0.	27.00	1.000	404	2	0	210.0	-10.	-10.	360.00	-3	-3	****	2	**
35	40000.	100000.	1	9.0	0.	27.00	0.	27.00	1.000	404	2	0	210.0	-5.	-5.	360.00	-3	-3	****	14	**
36	40000.	100000.	1	14.0	0.	22.00	0.	22.00	.100	404	1	0	180.0	-4.	14.	360.00	-1	-1	****	4	**
37	42000.	0.	1	14.0	0.	22.00	0.	22.00	.100	401	1	0	180.0	-4.	14.	360.00	-2	-2	****	1	**
38	42000.	18.	1	14.0	0.	22.00	0.	0.00	.100	310	1	0	180.0	25.	0.	0.00	-2	6	7	2	1
39	42000.	18.	1	14.0	0.	22.00	0.	0.00	.100	320	1	0	180.0	25.	0.	0.00	-2	6	8	10	1
40	42000.	18.	2	14.0	0.	22.00	0.	22.00	.100	110	1	0	180.0	-4.	14.	360.00	-2	4	5	3	1
41	42000.	100.	1	14.0	0.	22.00	0.	22.00	.100	402	1	0	180.0	-4.	14.	360.00	-2	-2	****	2	**
42	42000.	1000.	1	14.0	0.	22.00	0.	22.00	.100	403	1	0	180.0	-4.	14.	360.00	-2	-2	****	2	**
43	42000.	30000.	2	14.0	0.	22.00	0.	22.00	.100	110	1	0	180.0	-4.	14.	360.00	-2	5	6	2	1
44	42000.	100000.	1	14.0	0.	22.00	0.	22.00	.100	404	1	0	180.0	-4.	14.	360.00	-2	-2	****	2	**
45	43000.	0.	1	9.0	0.	27.00	0.	27.00	1.000	401	2	0	210.0	-10.	-10.	360.00	-4	-4	****	1	**
46	43000.	0.	1	9.0	0.	27.00	0.	27.00	1.000	401	2	0	210.0	-5.	-5.	360.00	-4	-4	****	14	**
47	43000.	18.	1	9.0	0.	27.00	0.	0.00	1.000	310	2	0	210.0	25.	0.	0.00	-4	20	47	2	3
48	43000.	18.	1	9.0	0.	27.00	0.	0.00	1.000	310	2	0	210.0	25.	0.	0.00	-4	20	27	17	2
49	43000.	18.	1	9.0	0.	27.00	0.	0.00	1.000	320	2	0	210.0	25.	0.	0.00	-4	20	48	10	3
50	43000.	18.	1	9.0	0.	27.00	0.	0.00	1.000	320	2	0	210.0	25.	0.	0.00	-4	20	28	17	2
51	43000.	18.	2	9.0	0.	27.00	0.	27.00	.100	110	2	0	210.0	-6.	-99.	360.00	-3	18	43	3	3
52	43000.	18.	2	9.0	0.	27.00	0.	27.00	.100	110	2	0	210.0	-3.	-99.	360.00	-3	18	23	14	2
53	43000.	18.	2	9.0	0.	27.00	0.	27.00	.500	110	2	0	210.0	-13.	-99.	360.00	-3	16	41	9	3
54	43000.	18.	2	9.0	0.	27.00	0.	27.00	.500	110	2	0	210.0	-10.	-99.	360.00	-3	16	21	14	2
55	43000.	18.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-15.	-99.	360.00	-3	14	39	9	3

SORTED SONAR DESCRIPTION TABLE

	ZSON	ZTGT	PATH	FREQ	XDPANG	XVBMWD	RDPANG	RVBMWD	PULEN	TYPE	NSPTR	SPEED	SHCLEV	RDNR	EMBMWD	NORVB	OUTPUT	IROUT	NBCMB	SYSCOD
56	43000.	18.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-13.	-99.	360.00	-3	14	19	14	2
57	43000.	18.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-10.	-10.	360.00	-4	14	45	14	3
58	43000.	18.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-5.	-5.	360.00	-4	14	25	14	2
59	43000.	100.	1	9.0	0.	27.00	0.	27.00	1.000	402	2	0	210.0	-10.	-10.	360.00	-4	-4	****	2	**
60	43000.	100.	1	9.0	0.	27.00	0.	27.00	1.000	402	2	0	210.0	-5.	-5.	360.00	-4	-4	****	14	**
61	43000.	1000.	1	9.0	0.	27.00	0.	27.00	1.000	403	2	0	210.0	-10.	-10.	360.00	-4	-4	****	2	**
62	43000.	1000.	1	9.0	0.	27.00	0.	27.00	1.000	403	2	0	210.0	-5.	-5.	360.00	-4	-4	****	14	**
63	43000.	30000.	2	9.0	0.	27.00	0.	27.00	.100	110	2	0	210.0	-4.	-99.	360.00	-3	19	44	2	3
64	43000.	30000.	2	9.0	0.	27.00	0.	27.00	.100	110	2	0	210.0	-3.	-99.	360.00	-3	19	24	14	2
65	43000.	30000.	2	9.0	0.	27.00	0.	27.00	.500	110	2	0	210.0	-13.	-99.	360.00	-3	17	42	9	3
66	43000.	30000.	2	9.0	0.	27.00	0.	27.00	.500	110	2	0	210.0	-10.	-99.	360.00	-3	17	22	14	2
67	43000.	30000.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-15.	-99.	360.00	-3	15	40	9	3
68	43000.	30000.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-13.	-99.	360.00	-3	15	20	14	2
69	43000.	30000.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-10.	-10.	360.00	-4	15	46	14	3
70	43000.	30000.	2	9.0	0.	27.00	0.	27.00	1.000	110	2	0	210.0	-5.	-5.	360.00	-4	15	26	14	2
71	43000.	100000.	1	9.0	0.	27.00	0.	27.00	1.000	404	2	0	210.0	-10.	-10.	360.00	-4	-4	****	2	**
72	43000.	100000.	1	9.0	0.	27.00	0.	27.00	1.000	404	2	0	210.0	-5.	-5.	360.00	-4	-4	****	14	**

APPENDIX G

UPDATE CARD IMAGES FOR USER 17.8, POSTSORT 17.8, AND SHARPS 18.8 (ACTIVE SONOBUOYS)

```
*ID $LARAYU02
*D $LARAYU01.1,2
      COMMON / LARAYS / LNMODE(35), KLOW(35), KHIGH(35), NOTITLE(35),
     *                  MLINO(35), MTYPE(35)
*ID $TARAYU02
*D $TARAYU01.1,2
      COMMON / TARAYS / SONTYP(15), SPEED1(15), SPEED2(15), SPEED3(15),
     *                  TLINO(15), TTYPE(15)
*ID USER*12
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE = 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ THIS UPDATE INTRODUCES TITLE LINE TYPES 10 (Q47) AND 12(Q50 AND
*/ Q62), AND MESSAGE LINE TYPES 11(Q47) AND 13(Q50 AND Q62).  THE Q47
*/ PREDICTION CONSISTS OF DIRECT PATH RANGES AGAINST A SHALLOW AND
*/ DEEP TARGET FOR A SINGLE CW PULSE LENGTH FOR BOTH A SHALLOW AND
*/ DEEP HYDROPHONE, AND COUNTER DETECT RANGES.  FOR BOTH THE Q50 AND
*/ Q62, THE PREDICTION CONSISTS OF DIRECT PATH RANGES AGAINST A SHALLOW
*/ AND DEEP TARGET FOR 3 CW PULSE LENGTHS AND 1 FM PULSE LENGTH FOR
*/ BOTH A SHALLOW AND DEEP HYDROPHONE, AND COUNTER DETECT RANGES.
*/ THE MAX NUMBER OF TYPE 10 INPUT CARDS IS INCREASED FROM 60 TO 75,
*/ AND TYPE 21 INPUT CARDS FROM 55 TO 65.  FOR CW PULSES FOR THE Q50
*/ AND Q62, THE USER SHOULD SPECIFY A RECOGNITION DIFFERENTIAL FOR
*/ REVERB OF -99. DB.  THIS SERVES AS A FLAG INDICATING THE
*/ PREDICTION WILL ALWAYS BE NOISE LIMITED, AND USER WILL NOT
*/ GENERATE ANY REVERBERATION LINES FOR THE SONAR DESCRIPTION TABLE
*/ TO SUPPORT THE DIRECT PATH LINES FOR THESE CASES.
*/ THIS UPDATE RECOGNIZES 7 NEW SONAR DEPTH INDICATORS TO BE PUNCHED
*/ IN COLUMNS 6-9 OF TYPE 21 CARDS.  THE FIRST 3 CHARACTERS DESIGNATE
*/ THE SONAR (Q47, Q50, OR Q62), THE 4TH CHARACTER CAN BE S, I, OR D,
*/ FOR SHALLOW, INTERMEDIATE, OR DEEP, RESPECTIVELY. (ONLY THE Q62
*/ USES THE INTERMEDIATE DEPTH.)  PROGRAM USER DERIVES 4 NEW SONAR
*/ DEPTH CODES FOR THE SONAR DESCRIPTION TABLE - 40000, INDICATES A
*/ SHALLOW SONOBUOY, 41000, INDICATES THE INTERMEDIATE DEPTH FOR THE
*/ Q62, 42000, INDICATES A DEEP Q47, AND 43000, INDICATES A DEEP Q50
*/ OR Q62.  ACTUAL DEPTHS ARE ASSIGNED IN SHARPS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/          $LARAYU02, $TARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER!
*/ $LARAYP02, $TARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSONT! $MSGTIT06, $OUTDAT2, $SONTAR03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3,
*/
*D USER*11.3
C     *****     LATEST CHANGE - 01 OCT 82
*D USER*06.1,4
      DIMENSION SCODE(75), STYPE(75), SINST(75), SMODE(75), ISPARM(75),
     1          NOZT(75), ZT(2,75), NOSPD(75), SPEED(3,75),
     2          NOYSID(75), PREDTYP(75), MSGTYP(75), MSGLINO(75),
     3          TTLTYP(75), TTLINO(75)
*D USER*09.7,10
      DIMENSION IZS(65), FREQ(65), NOOPANG(65), XDEPANG(8,65),
     1          RDEPANG(8,65), XVBMWD(65), RVBMWD(65), EHRMWD(65),
     2         PULSLEN(65), SRCLEV(65), RONN(65),
     3         RONR(65), RMRK(3,65)
*D USER*06.12
      DIMENSION NSAVE(75), ZRVB(4)
*D USER*09.11
```

```
      DIMENSION IZS(10),IZF(10), SECODE(3)
*D USER*09.29
      DATA IZSCODE / 4H V13, 1LF, 1LP, 4H047S, 4H047D, 4H050S,
     1               4H050D, 4H062S, 4H062D, 4H062I /
*D USER*11.12
      DATA MARJ /15/, MARK /35/, MAXSNT /25/, MAXSUP /150/
*D USER*11.17
      DATA MAXSYS /75/, MAXLEC /65/
*D USER,232,233
*D USER*09.78
*D USER,235
     2              EMBMWD(I), PULSLEN(I), SRCLEV(I), RDNN(I),
     3              RUNR(I), (RMRK(J,I), J=1,3)
 9030 FORMAT(I2, 1X, I2, A4, 1X, F4.0, 1X, I1, 2(1X, F2.0),
     1       4(1X, F4.0) 1X, A5, 2F4.0, 1X, 2A10, A3)
*D USER,672,673
      IF (RDNR(I) .NE. 0) ENCODE(5,8160,P(17) ) RDNR(I)
 8160 FORMAT(F5.1)
*D USER*09.112
      PRINT 8170, (RMRK(J,I),J=1,3),I,IZS(I),FREQ(I),NODPANS(I),
*D USER*09.113
 8170 FORMAT(2X, 3A10, /, 4X, I2, 5X, A4, 3X, F5.2, 4X, I1, 5X,
*D USER,712
 8180 FORMAT(33X, 3(A3,1H,)), A3, 2X, 3(A3,1H,), A3)
*I USER*07.1
      IF (II .EQ. 11)  INC = 4
      IF (II .EQ. 13)  INC = 10
*D USER,967
*D USER,981
C
C          IF PTYPE INDICATES ACTIVE PREDICTION, DECREMENT
C          REVERBERATION POINTER (REVERB POINTER IS KEPT IN THE
C          NEGATIVE), BUT IF RECOGNITION DIFFERENTIAL FOR REVERB IS
C          -99., IT INDICATES A SPECIAL CASE IN WHICH THE ACTIVE SONAR
C          IS ASSUMED TO BE NOISE LIMITED, THEREFORE REVERB LINES ARE
C          NOT GENERATED.
C
      IF ( (PTYPE .GE. 100) .AND. (PTYPE .LE. 199) .AND.
     1     (RDNR(N3) .NE. -99.) )  NR= NR - 1
*D USER*09.114
      IF (IZS(N3) .EQ. IZSCODE(1) ) ZSUSE = 20000.
C
C          ALL SHALLOW SONOBUOY DEPTHS SHARE THE SAME CODE BECAUSE
C          THEY HAVE THE SAME DEPTH.
C          THE Q50 AND Q62 DEEP DEPTH SHARE THE SAME CODE BECAUSE
C          THEY HAVE THE SAME DEPTH.
C
      IF (IZS(N3) .EQ. IZSCODE(4) ) ZSUSE = 40000.
      IF (IZS(N3) .EQ. IZSCODE(5) ) ZSUSE = 42000.
      IF (IZS(N3) .EQ. IZSCODE(6) ) ZSUSE = 40000.
      IF (IZS(N3) .EQ. IZSCODE(7) ) ZSUSE = 43000.
      IF (IZS(N3) .EQ. IZSCODE(8) ) ZSUSE = 40000.
      IF (IZS(N3) .EQ. IZSCODE(9) ) ZSUSE = 43000.
      IF (IZS(N3) .EQ. IZSCODE(10)) ZSUSE = 41000.
C
      IF (ZSUSE .NE. 0.0)  GO TO 4070
*D USER*09.168,172
*D USER,990
*I USER,1093
C
C          IF RECOGNITION DIFFERENTIAL FOR REVERB IS -99., IT SIGNALS
C          ACTIVE SONOBUOYS THAT ARE NOISE LIMITED (CW PULSE FOR
C          Q50 AND Q62). SKIP REVERB LINES.
C
      IF (RDNR(N3) .EQ. -99.)  GO TO 4540
*I USER*
```

```
C
C          IF THE IXTH ELECTRONIC PARAMETER SET HAS A RECOGNITION
C          DIFFERENTIAL FOR REVERB OF -99., NO REVERB LINES EXIST FOR
C          THAT SET.
C
      IF (RDNR(IX) .EQ. -99.)  GO TO 4510
*C USER
*ID LINEU*04
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO MAKE MINOR ADJUSTMENTS TO FORMAT
*/ STATEMENTS TO ACCOMMODATE VALUES THAT MAY BE ENCOUNTERED WITH ACTIVE
*/ SONOBUOY INPUTS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, $LARAYU02, $TARAYU02,          TITLEU*04, UNSORTU05 IN USER;
*/ $LARAYP02, $TARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; $MSGTIT06, $OUTDAT2, $SONTAB03, SHARMLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D LINEU*03.1
C     *****      LATEST CHANGE - 01 OCT 82
*D LINEU*02.1
     2              35(1X, A10, 2(2X,I3), 3X, I2, 6X, I2, 5X, I2, / ))
*C LINEU
*ID TITLEU*04
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO MAKE MINOR ADJUSTMENTS TO FORMAT
*/ STATEMENTS TO ACCOMMODATE VALUES THAT MAY BE ENCOUNTERED WITH ACTIVE
*/ SONOBUOY INPUTS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, $LARAYU02, $TARAYU02, LINEU*04,          UNSORTU05 IN USER;
*/ $LARAYP02, $TARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; $MSGTIT06, $OUTDAT2, $SONTAB03, SHARMLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D TITLEU*03.1
C     *****      LATEST CHANGE - 01 OCT 82
*D TITLEU*02.4
     1              *NO.*, 2X, *FORMAT*, //, 15(2X,A3,5X,3(A2,1X),2X,
*C TITLEU
*ID UNSORTU05
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO MAKE MINOR ADJUSTMENTS TO FORMAT
*/ STATEMENTS TO ACCOMMODATE VALUES THAT MAY BE ENCOUNTERED WITH ACTIVE
*/ SONOBUOY INPUTS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, $LARAYU02, $TARAYU02, LINEU*04, TITLEU*04,          IN USER;
*/ $LARAYP02, $TARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; $MSGTIT06, $OUTDAT2, $SONTAB03, SHARMLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
```

```
*/ SAOYSV011, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D UNSORTU04.1
C      *****     LATEST CHANGE - 01 OCT 82
*D UNSORTU04.5,6
*D UNSORTU02.12
     9              2X, 2(F3.3,2X,F5.2,2X), F5.3, 1X, I3, 2X,
     A              I4, 3X, I2, 4X, F5.1, 2(2X,F4.0), 1X, F6.2, 2X, I3,
     B              3X, I3, 2X, I4, 2X, I2 / ))
*C UNSORTU
```

```
*ID $LARAYP02
*D $LARAYP01.1,2
      COMMON / LARAYS / LNMODE(35), KLOW(35), KHIGH(35), NOTITLE(35),
     *                  MLINO(35), MTYPE(35)
*ID $TARAYP02
*D $TARAYP01.1,2
      COMMON / TARAYS / SONTYP(15), SPEED1(15), SPEED2(15), SPEED3(15),
     *                  TLINO(15), TTYPE(15)
*ID POSTSRT09
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM PREDICTIONS
*/ FOR ACTIVE SONOBUOYS.  IT INCREASED THE SIZE OF CERTAIN ARRAYS TO
*/ ACCOMMODATE THE EXPANDED SONAR DESCRIPTION TABLE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USPR*12, $LARAYU02, $TARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ $LARAYP02, $TARAYP02,            TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; $MSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D POSTSRT08.3
C     *****     LATEST CHANGE - 01 OCT 82
*D POSTSRT06.5
     1DIMENSION CODESON(12), BBMANG(12)
*D POSTSRT08.4
      DIMENSION NEGNOS(100), NOS(250), NEGSORT(100), NOSORT(250),
*D POSTSRT08.34
      DATA MAXNEG /100/, MAXNOS /250/, MAXRVB /50/, MAXPLE /70/
*D POSTSRT08.40
      DATA MAXSON /12/
*D POSTSRT06.6
      DO 1210 I=2,MAXSON
*C POSTSRT
*ID TITLEP*04
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO MAKE MINOR ADJUSTMENTS TO FORMAT
*/ STATEMENTS TO ACCOMMODATE VALUES THAT MAY BE ENCOUNTERED WITH ACTIVE
*/ SONOBUOY INPUTS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, $LARAYU02, $TARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ $LARAYP02, $TARAYP02, POSTSRT09,            LINEP*04, UNSORTP05 IN
*/ POSTSORT; $MSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D TITLEP*03.1
C     *****     LATEST CHANGE - 01 OCT 82
*D TITLEP*02.4
     1         *NO.*, 2X, *FORMAT*, //, 15(2X, A3, 5X, 3(A2, 1X)), 2X,
*C TITLEP
*ID LINEP*04
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
```

```
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO MAKE MINOR ADJUSTMENTS TO FORMAT
*/ STATEMENTS TO ACCOMMODATE VALUES THAT MAY BE ENCOUNTERED WITH ACTIVE
*/ SONOBUOY INPUTS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USFR*12, $LARAYU02, $TARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ $LARAYP02, $TARAYP02, POSTSRT09, TITLEP*04,          UNSORTP05 IN
*/ POSTSORT; $MSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D LINEP*03.1
C     *****      LATEST CHANGE - 01 OCT 82
*D LINEP*02.1
     2              35(1X, A10, 2(2X,I3), 3X, I2, 6X, I2, 5X, I2, /) )
*C LINEP
*ID UNSORTP05
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO MAKE MINOR ADJUSTMENTS TO FORMAT
*/ STATEMENTS TO ACCOMMODATE VALUES THAT MAY BE ENCOUNTERED WITH ACTIVE
*/ SONOBUOY INPUTS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USFR*12, $LARAYU02, $TARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ $LARAYP02, $TARAYP02, POSTSRT09, TITLEP*04, LINEP*04,          IN
*/ POSTSORT; $MSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ $NOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D UNSORTP04.1
C     *****      LATEST CHANGE - 01 OCT 82
*D UNSORTP04.5
*D UNSORTP02.9.10
     1          8(F3.0, 2X, F5.2, 2X), F5.3, 1X, I3, 2X, I4, 3X, I2, 4X,
     2          F5.1, 2(1X, F4.0), 1X, F6.2, 2X, I3, 3X, I3,
     3          2(1X, I4), 4X, I2)
*C UNSORTP
```

```
*ID SHARBLK11
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ ID SHARBLK11 DEFINES THE CODED SONOBUOY DEPTHS AND INCREASES THE
*/ ALLOWABLE NUMBER OF TITLE LINES, MESSAGE LINES, AND SONAR DEPTH
*/ CODES.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; SMSGTIT06, SOUTDAT2, SSONTAB03,          , SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3,
*/
*D SHARBLK10.1
C     *****     LATEST CHANGE - 01 OCT 82
*D SHARBLK10.14,15
      DATA MAXJUP / 15 /, MAXKUP / 35 /, MAXNUP / 350 /, MAXSNT / 25 /,
     1     MAXSUP / 150 /, MAXSON / 10 /
*D SHARBLK09.2
      DATA ZSONCOD / 6., 10000., 11000., 15000., 16000., 20000.,
     1               40000., 41000., 42000., 43000., /
*D SHARBLK09.9.14
C
C             40000. IS THE DEPTH CODE FOR THE Q47, SHALLOW.
C             42000. IS THE DEPTH CODE FOR THE Q47, DEEP
C             40000. IS THE DEPTH CODE FOR THE Q50, SHALLOW
C             43000. IS THE DEPTH CODE FOR THE Q50, DEEP
C             40000. IS THE DEPTH CODE FOR THE Q62, SHALLOW
C             43000. IS THE DEPTH CODE FOR THE Q62, DEEP
C             41000. IS THE DEPTH CODE FOR THE Q62, INTERMEDIATE
C
      DATA NSCODE / 10 /
C
C          NSCODE IS THE NUMBER OF SONAR DEPTH CODES CONTAINED IN
C          ZSONCOD THAT SHARPS CAN RECOGNIZE.
C
*C SHARBLK
*ID SMSGTIT06
*D SMSGTIT01.1,2
*D SMSGTIT04.1
*D SMSGTIT05.1
      COMMON / MSGTITL / JUP, SONTYP(15), SPEED1(15), SPEED2(15),
     1         SPEED3(15), LINOT(15), NOTFRMT(15), INTRSTN(15),
     2         KUP, LNMODE(35), KLOW(35), KHIGH(35), LINOM(35),
     3         NOTITLE(35), NOMFRMT(35), MSGSKIP, EXPMSG(7),
     4         PLSTIT(4)
*I SMSGTIT.34
C
C          PLSTIT CONTAINS PULSE LENGTHS THAT MUST BE INSERTED IN
C          THE TITLE LINES FOR ACTIVE SONOBUOYS
C
*ID SOUTDAT2
*D SOUTDAT1.1
      COMMON / OUTDATA / DRANGE(250), IROUT(250)
*ID SSONTAB03
*D SSONTAB02.1,4
      COMMON / SONTABL / IZSON(10), ZSON(10), CSON(10), QSON(10),
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     1                    CDEPSON(10), ZSONCOD(10), HHMANG(10),
     2                    CZBGN(2,10), CZEND(2,10), VBOTMIN(10),
     3                    NOSON, Z13, Z35, Z35PM, ZZ35, ZZ35PM,
     4                    ZNULL, NSCODE, ZASBS, ZQ62I, ZQ47D, ZASBD,
     5                    HDGTBD(4), NHDGTB
*I $SONTAB02.14
C          ZSONCOD(7) THRU (10) CONTAIN DEPTH CODES FOR ACTIVE SONOBUOYS
C                    ZSONCOD(7)  CONTAINS THE DEPTH CODE FOR
C                                SHALLOW ACTIVE SONOBUOYS.
C                    ZSONCOD(8)  CONTAINS THE DEPTH CODE FOR THE Q62, INT
C                    ZSONCOD(9)  CONTAINS THE DEPTH CODE FOR THE Q47, DEEP
C                    ZSONCOD(10) CONTAINS THE DEPTH CODE FOR THE Q50, DEEP
C                                AND THE Q62 DEEP.
C
*I $SONTAB02.21
C
C          ZASBS IS THE DEPTH (IN KM) OF THE SHALLOW SONOBUOYS
C          ZQ62I IS THE DEPTH (IN KM) OF THE Q62, INTERMEDIATE
C          ZQ47D IS THE DEPTH (IN KM) OF THE Q47, DEEP
C          ZASBD IS THE DEPTH (IN KM) OF THE Q50 AND Q62, DEEP
C          HDGTBD IS AN ARRAY CONTAINING THE DEPTH CODES OF ANY AND
C                 ALL ACTIVE SONOBUOYS THAT ARE DEEPER THAN THE BOTTOM.
C          NHDGTB IS THE NUMBER OF ENTREES IN HDGTBD.
*ID SHARP3*24
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ ID SHARP3*24 TESTS FOR SONOBUOY DEPTHS THAT EXCEED THE BOTTOM DEPTH.
*/ IF SUCH A CASE IS FOUND, ALL PROCESSING IS SKIPPED FOR THAT BUOY
*/ DEPTH.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; SMSRTIT06, SOUTDAT2, $SONTAB03, SHARSLK11,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D SHARP3*23.1
C     *****     LATEST CHANGE - 01 OCT 82
*I SHARP3*07.12
C
C          IF THIS LINE IS FOR AN ACTIVE SONOBUOY WHOSE DEPTH EXCEEDS
C          THE BOTTOM, SKIP ALL PROCESSING.
C
      IF (NHDGTB .EQ. 0)  GO TO 190
      DO 180 J = 1,NHDGTB
        IF (ZSONTB(I) .EQ. HDGTBD(J) ) GO TO 2000
  180 CONTINUE
C
  190 CONTINUE
C
*C SHARP3
*ID ENVIN*29
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ ID ENVIN*29 EXPANDS THE SIZE OF THE SONAR SUBSET THAT MAY BE
*/ SPECIFIED FROM 9 TO 12 SONARS.
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*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER1
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: SMSGTITC6, SOUTDAT2, SSONTAB03, SHARBLK11, SHARP3*24,
*/           MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINF3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSOP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3,
*/
*D ENVIN*28.1
C     *****     LATEST CHANGE - 01 OCT 82
*D ENVIN*07.17
      DIMENSION STYP(12), ITYP(12), NEDRVB(25)
*D ENVIN*07.71,72
      READ(25,9050) SUBID, CSIG, (STYP(I),I=1,12)
 9050 FORMAT(A4, A1, 1X, 12(A3,2X) )
*D ENVIN*14.39
      READ(25,9050) SUBID,CSIG, (STYP(I),I=1,12)
*D ENVIN*07.118
      DO 130 I=1,12
*D ENVIN*07.383
     *         *, SONAR CODES =*,12(A3,2X) )
*C ENVIN
*ID STDEPTH17
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ ID STDEPTH17 ASSIGNS SONAR DEPTHS TO ACTIVE SONOBUOYS BASED ON CODED
*/ DEPTHS FROM THE SONAR DESCRIPTION TABLE.  THIS IDENT ALSO CREATES
*/ A LIST OF ANY ACTIVE SONOBUOY CODES WHOSE ACTUAL DEPTHS EXCEED THE
*/ BOTTOM DEPTH.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER1
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: SMSGTITC6, SOUTDAT2, SSONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320,          TITLINE07,
*/ LINF3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSOP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3,
*/
*D STDEPTH16.1
C     *****     LATEST CHANGE - 01 OCT 82
*I STDEPTH.66
      NHDGTH = 0
*D STDEPTH15.11,12
C
C          CODESON CONTAINS THE ACTUAL CODES THAT INCLUDE MAX TOW
C          DEPTH VALUES FOR SERIES BETWEEN 10000. AND 16000.
C          FOR THESE CASES, EXTRACT THE SERIES FROM THE CODE.
C
*D STDEPTH15.15
      IF ( (CODESON(I) .GT. 6.) .AND. (CODESON(I) .LT. 20000. ) )
*I STDEPTH15.17
      IF (CODESON(I) .GE. 20000.)  USESON = CODESON(I)
*D STDEPTH15.20
      GO TO (400, 500, 525, 550, 575, 600, 620, 630, 640, 650) J
*I STDEPTH.100
C
  620 CONTINUE
C
C          CODED SONAR DEPTH IS FOR ANY SHALLOW SONOBUOY
C          SET DEPTH = 60 FT IN KM
C
```

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      ZSON(I) = 0.0183
      ZASHS = 0.0183
      GO TO 800
C
  640 CONTINUE
C
C           CODED SONAR DEPTH IS FOR Q62, INTERMEDIATE
C           SET DEPTH = 450 FT IN KM
C
      ZSON(I) = 0.1372
      ZQ62I = 0.1372
      GO TO 800
C
  648 CONTINUE
C
C           CODED SONAR DEPTH IS FOR Q47, DEEP
C           SET DEPTH = 800 FT IN KM
C
      ZSON(I) = 0.2438
      ZQ47D = 0.2438
      GO TO 800
C
  650 CONTINUE
C
C           CODED SONAR DEPTH IS FOR Q50 AND Q62, DEEP
C           SET DEPTH = 1500 FT IN KM
C
      ZSON(I) = 0.4572
      ZA50D = 0.4572
      GO TO 800
C
*I STDEPTH.111
C
C           IF CURRENT SONAR DEPTH IS AN ACTIVE SONOBUOY THAT IS BELOW
C           THE BOTTOM, CAPTURE THE CODE SO THAT PROCESSING THIS
C           SONAR DEPTH CAN BE SKIPPED.
C
      IF ( (CODESON(I) .LT. ZSONCOD(7) ) .OR.
     1     (CODESON(I) .GT. ZSONCOD(10) ) ) GO TO 850
      IF (ZSON(I) .LT. ZBOT) GO TO 850
      NMDGTB = NMDGTB + 1
      MDGTBD(NMDGTB) = CODESON(I)
      IZSON(I) = 0
      CSON(I) = 0.0
      GSON(I) = 0.0
      GO TO 900
C
  850 CONTINUE
*I STDEPTH.102
C
C           IF CURRENT SONAR DEPTH IS AN ACTIVE SONOBUOY THAT IS BELOW
C           THE BOTTOM, SKIP VELCOMP.
C
        IF (NMDGTB .EQ. 0)  GO TO 1014
        DO 1012 J = 1,NMDGTB
          IF (CODESON(I) .EQ. MDGTBD(J) ) GO TO 1020
 1012   CONTINUE
C
 1014 CONTINUE
C
*C STDEPTH
*ID RANGE3120
*/
*/ PROGRAMMER - R. MULT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
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*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ IN RANGER320 TESTS ARE MADE FOR SONOBUOY DEPTHS THAT EXCEED THE BOTTOM.
*/ IF SUCH A CASE IS FOUND, ALL PROCESSING IS SKIPPED FOR THAT BUOY
*/ DEPTH.  THIS IDENT ALSO TREATS AS NOISE LIMITED ALL SONAR DESCRIPTION
*/ TABLE LINES THAT HAVE A REVERBERATION RECOGNITION DIFFERENTIAL OF
*/ -99. DB, AND IMPLEMENTS A NEW TEST TO ASSURE THE PROPER REVERBERATION
*/ TABLE IS CORE RESIDENT.  THIS TEST WAS NECESSITATED BY REVISIONS IN
*/ THE SONAR TABLE STRUCTURE WHERE NOT ALL ACTIVE LINES HAVE ASSOCIATED
*/ REVERBERATION LINES.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, $LARAYU02, $TARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ $LARAYP02, $TARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; $MSGTIT06, $OUTDAT2, $SONTAB03, SHARPLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22,              STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D RANGER319.1
C     *****       LATEST CHANGE - 01 OCT 82
*I RANGER3.56
      LOGICAL NOYSLIM
*D RANGER316.5
      DO 10 I = 1,250
*I RANGER3.68
C
C           INITIALIZE THE NUMBER FOR THE PREVIOUS REVERB TABLE
C           READ FROM EXTENDED CORE.
C
      LASTRB = 1000.
C
*I RANGER304.5
C
C           IF THIS LINE IS FOR AN ACTIVE SONOBUOY WHOSE DEPTH EXCEEDS
C           THE BOTTOM, SKIP ALL PROCESSING.
C
      IF (NMDGTB .EQ. 0)  GO TO 15
      DO 12 J = 1,NMDGTB
        IF (ZSONTB(I) .EQ. MDGTBD(J) ) GO TO 2000
   12 CONTINUE
C
   15 CONTINUE
C
*I RANGER3.75
C
C           IF THE RECOGNITION DIFFERENTIAL FOR REVERB IS -99. IT IS
C           REALLY A FLAG INDICATING THIS RANGE SHOULD ALWAYS BE
C           CONSIDERED NOISE LIMITED AND ALL REVERBERATION
C           CONSIDERATIONS MUST BE SKIPPED.
C
      NOYSLIM = .FALSE.
      IF (RDNRTB(I) .LT. 0.126E-09)  NOYSLIM = .TRUE.
*I RANGER3.100
C           THE IMPLEMENTATION OF THE NOISE LIMITED CASES HAD CREATED
C           SITUATIONS WHERE NOCHG MAY INDICATE THAT THE DESIRED
C           REVERB IS IN CORE,  BUT ACTUALLY IT IS NOT.
C           USE LASTRB TO ASSURE WE HAVE THE PROPER REVERB TABLE.
C
      IF (LASTRB .EQ. NORVBTB(I) ) GO TO 45
C
C           A REVERB RECOGNITION DIFFERENTIAL OF -99. INDICATES A
C           NOISE LIMITED CASE.  THERE IS NO ACTUAL ASSOCIATED REVERB
C           TABLE.
C
      IF (NOYSLIM)  GO TO 45
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C
C          IF THE PREDICTION TYPE FOR THE ITH LINE IS IN THE RANGE OF
C          100 TO 199 (DIRECT, CONVERGENCE ZONE, OR BOTTOM BOUNCE)
C          RETRIEVE THE TIME AND POWER ARRAYS FOR REVERBERATION
C          DATA FROM ECS.
C
      IF ( (PTYPETB(I) .LT. 100) .OR. (PTYPETB(I) .GT. 199) ) GO TO 45
C
      CALL RETREVE(NORVBTB(I), ECSRTIM, TIMREV, NORVB)
      CALL RETREVE(NORVBTB(I), ECSRTOT, REVTOT, NORVB)
      LASTRB = NORVBTB(I)
C
   45 CONTINUE
*D RANGER3.119,126
*I RANGER3.208
      IF(NOYSLIM) GO TO 410
*I RANGER3.211
  410 CONTINUE
*I RANGER301.3
C
C          FOR NOISE LIMITED CASES, FOM RANGE = DETECTION RANGE.
C
      IF (NOYSLIM)  GO TO 142
*I RANGER3.243
C
  142 CONTINUE
      IF (SSW(14) ) PRINT 9045, DRANGE(NOOUTTB(I)), RDNRTB(I)
 9045 FORMAT(* DETECTION RANGE = FOM RANGE = *,E12.6,
     1       * REVERB RECOGNITION DIFFERENTIAL = *,E12.6)
      GO TO 2000
*C RANGER3
*ID MSGPRT*22
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ ID MSGPRT*22 PREPARES AN ARRAY OF PULSE LENGTHS THAT ARE WRITTEN
*/ AS PART OF THE TITLE LINE BY SUBROUTINE TITLINE FOR AN ACTIVE
*/ SONOBUOY.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; SMSGTIT06, SOUTDAT2, SSONTABD3, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17,                RANGER320, STDEPTH17, TITLINE07,
*/ LIN.3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D MSGPRT*21.1
C     *****     LATEST CHANGE - 01 OCT 82
*D MSGPRT.32
      DIMENSION TITSIG(15)
*D MSGPRT*17.4
      DO 10 I = 1,250
*I MSGPRT.95
C
C          TITLE LINES OF TYPE 10 REQUIRE A PULSE LENGTH, AND TYPE 12
C          REQUIRES 4 PULSE LENGTHS.  EXTRACT PULENTB VALUES FROM THE
C          SONAR DESCRIPTION TABLE (SDT) AND STORE THEM IN ARRAY
C          PLSTIT FOR USE BY SUBROUTINE TITLINE.
C          THE SDT LINES CONTAINING THE RELEVANT PULSE LENGTHS CAN
C          BE IDENTIFIED FROM THE NOOUTTB ARRAY.  THE FIRST PULSE
C          LENGTH IN A TITLE LINE CORRESPONDS TO THE FIRST RANGE ON
C          THE FIRST CORRESPONDING MESSAGE LINE (ARRAY KLOW) AND
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C           SUBSEQUENT PULSE LENGTHS CORRESPOND TO  EVERY OTHER RANGE ON
C           THAT LINE.
C
      IF ( (NOTFRMT(J) .NE. 10) .AND. (NOTFRMT(J) .NE. 12) ) GO TO 190
C
C
      LOCATE = KLOW(I)
      NPULS = 1
      IF (NOTFRMT(J) .EQ. 12)  NPULS = 4
      DO 180 IX = 1,NPULS
        DO 160 IXX = 1,NUP
          ILINE = IXX
          IF (NOOUTTB(IXX) .EQ. LOCATE)  GO TO 170
  160   CONTINUE
C
  170   CONTINUE
        PLSTIT(IX) = PULENTB(ILINE)
        LOCATE = LOCATE + 2
  180 CONTINUE
C
  190 CONTINUE
*C MSGPRT
*ID MSGLINE17
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ ID MSGLINE17 PRINTS THE MESSAGE LINES FOR ACTIVE SONOBUOYS.
*/ IF A SONOBUOY DEPTH EXCEEDS THE BOTTOM DEPTH, THE LINE IS SKIPPED
*/ AND A COMMENT IS ENTERED IN THE DAYFILE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; SMSGTIT06, SOUTDAT2, SSONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29,              MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*09, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3,
*/
*D MSGLINE16,1
C     *****     LATEST CHANGE - 01 OCT 82
*I MSGLINE.23
      DIMENSION HDRMK1(5)
*I MSGLINE.24
      DATA HDRMK1 / 10H          , 10HFT, DPT BT, 10H BOT, NO M,
     1              10HSG LINE.  , 0000 0000 0000 0000 00000 /
C
*I MSGLINE03.1
      IF (NOMFRMT (I) .EQ.  11)  GO TO 700
      IF (NOMFRMT (I) .EQ.  13)  GO TO 800
*I MSGLINE.141
C
  700 CONTINUE
C
C           FORMAT TYPE 11 - PERFORM THE NECESSARY CONVERSIONS AND
C           THEN WRITE THE MESSAGE LINE.
C
C           DETERMINE HYDROPHONE DEPTH ASSOCIATED WITH THIS LINE.
C
      LOCATE = KLOW(I)
      DO 750 IMAIN = 1,NUP
        IF (NOOUTTB(IMAIN) .NE. LOCATE)  GO TO 750
        ZSUSE = ZASWS
        IF (ZSONTB(IMAIN) .GT. 40000.) ZSUSE = 20470
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C
C          IF THE SONOBUOY DEPTH EXCEEDS THE BOTTOM, SKIP THE LINE AND
C          ENTER A MESSAGE IN THE DAYFILE.
C
        IF (NMDGTB .EQ. 0)  GO TO 760
        DO 720 J = 1,NMDGTB
          IF (ZSONTB(IMAIN) .EQ. MDGTBD(J) ) GO TO 900
  720   CONTINUE
C
        GO TO 760
  750 CONTINUE
C
  760 CONTINUE
C
      IZMD = IFIX( (ZSUSE * FTPERKM / 10.0) + 0.5)
      CALL CONVERT(KLOW(I), KLOW(I) + 1, 2)
      CALL CONVERT(KLOW(I) + 2, KHIGH(I), 1)
      KLO = KLOW(I)
      KHI = KHIGH(I)
C
      WRITE(IOUT,9011) LNMODE(I), IZMD,(IROUT(K),K=KLO,KHI)
 9011 FORMAT(2X,A4,I3,4X,A3,1H/,A3,26X,I4,1H/,I4)
      RETURN
C
  800 CONTINUE
C
C          FORMAT TYPE 13 - PERFORM THE NECESSARY CONVERSIONS AND
C          THEN WRITE THE MESSAGE LINE.
C
C          DETERMINE HYDROPHONE DEPTH ASSOCIATED WITH THIS LINE.
C
      LOCATE = KLOW(I)
      DO 850 IMAIN = 1,NUP
        IF (NOOUTTB(IMAIN) .NE. LOCATE)  GO TO 850
        ZSUSE = ZASBS
        IF (ZSONTB(IMAIN) .GE. 41000.)  ZSUSE = ZQ62I
        IF (ZSONTB(IMAIN) .GE. 43000.)  ZSUSE = ZASBD
C
C          IF THE SONOBUOY DEPTH EXCEEDS THE BOTTOM, SKIP THE LINE AND
C          ENTER A MESSAGE IN THE DAYFILE.
C
        IF (NMDGTB .EQ. 0)  GO TO 860
        DO 820 J = 1,NMDGTB
          IF (ZSONTB(IMAIN) .EQ. MDGTBD(J) ) GO TO 900
C
  820   CONTINUE
C
        GO TO 860
  850 CONTINUE
C
  860 CONTINUE
C
      IZMD = IFIX((ZSUSE * FTPERKM / 10.0) + 0.5)
      CALL CONVERT(KLOW(I), KLOW(I) + 7, 2)
      CALL CONVERT(KLOW(I) + 8, KHIGH(I), 1)
      KLO = KLOW(I)
      KHI = KHIGH(I)
      WRITE(IOUT,9013) LNMODE(I), IZMD, (IROUT(K),K=KLO,KHI)
 9013 FORMAT(2X,A4,I3,4X,3(A3,1H/,A3,1X),1X,A3,1H/,A3,1X,I4,1H/,I4)
      RETURN
  900 CONTINUE
C
C          THE CURRENT MESSAGE LINE WILL NOT BE PRINTED BECAUSE
C          THE SONOBUOY DEPTH EXCEEDS THE BOTTOM.  ALL RELATED
C          PROCESSING FOR THIS LINE HAS BEEN BY-PASSED IN SHARP3
C          AND RANGER.
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C
C          PREPARE MESSAGE AND ENTER IN THE DAYFILE.
C
      SONAR = SONTYP (ICODE(IMAIN) )
      DEPTH = ZSUSE * FTPERKM
      ENCODE(10, 910, HDRMK1(1)) SONAR, DEPTH
  910 FORMAT(A3, 2X, F5.0)
      CALL REMARK (HDRMK1)
      RETURN
*C MSGLINE
*ID TITLINE07
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO ALLOW SHARPS TO PERFORM
*/ PREDICTIONS FOR ACTIVE SONOBUOYS.
*/ IN TITLINE07 WRITES TITLE LINES TYPE 10 AND 12 WHICH ACCOMPANY
*/ ACTIVE SONOBUOY PREDICTIONS.  THESE TITLE LINES ALSO INCLUDE PULSE
*/ LENGTHS TAKEN FROM AN ARRAY PREPARED IN MSGPRT.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, $LARAYU02, $TARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ $LARAYP02, $TARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; $WSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D TITLINE06.1
C     *****     LATEST CHANGE - 01 OCT 82
*I TITLINE.12
      DIMENSION ICHARP(4)
C
C          ICHARP CONTAINS PULSE LENGTHS FOR TITLE LINES IN
C          CHARACTER FORMAT WITH LEADING ZEROS IF THE PULSE LENGTH IS
C          LESS THAN 1. SEC.
C
*I TITLINE.16
      DATA IZCHAR / 0000 0000 0000 0000 00030 /
C
*I TITLINE.29
      IF (NOTFRMT(J) .EQ. 10)  GO TO 400
      IF (NOTFRMT(J) .EQ. 12)  GO TO 500
*I TITLINE.82
C
  400 CONTINUE
C          PREPARE PULSE LENGTH CHARACTER STRING WITH LEADING ZERO
C          IF NEEDED.
C
      ENCODE(3,410,ICHARP(1) ) PLSTIT(I)
  410 FORMAT(F3.1)
      IF (PLSTIT(I) .LT. 1.0)  CALL STOCH(ICHARP(1),1,IZCHAR)
C
C          WRITE THE TITLE LINE USING FORMAT TYPE 10.
C          THIS FORMAT INCLUDES ONE PULSE LENGTH THAT MUST BE INSERTED
C          IN ARRAY PLSTIT BY SUBROUTINE MSGPRT.
C
      WRITE(IOUT,9010) SONTYP(J),ICHARP(1)
 9010 FORMAT(1X, A4, '--HD--CW--', A3, 29(1H-), 'CDC/CDH-')
C
      RETURN
C
  500 CONTINUE
C
C          PREPARE PULSE LENGTH CHARACTER STRING WITH LEADING ZEROS
```

```
C          IF NEEDED.
C
      DO 520 I = 1,4
        ENCODE(3,410,ICHARP(I) ) PLSTIT(I)
        IF (PLSTIT(I) .LT. 1.0)  CALL STOCH(ICHARP(I),1,IZCHAR)
  520 CONTINUE
C
C          WRITE THE TITLE LINE USING FORMAT TYPE 12.
C          THIS FORMAT INCLUDES FOUR PULSE LENGTHS THAT MUST BE
C          INSERTED IN ARRAY PLSTIT BY SUBROUTINE MSGPRT.
C
      WRITE(IOUT,9012) SONTYP(J), (ICHARP(I),I=1,4)
 9012 FORMAT(1X, A4, *--HD--CW*, 2(*--*,A3,*---*),*--*, A3,
     1       *--FM--*, A3, 4(1H-), *CDC/CDM-*)
C
*C TITLINE
*ID CONVERT08
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; SMSGTIT06, SOUTDAT2, SSONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06              IN SHARP3.
*/
*D CONVERT07,1
C     *****     LATEST CHANGE 01OCT82
*C CONVERT
*ID LINE3*03
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT; SMSGTIT06, SOUTDAT2, SSONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/          NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*I LINE3*01,4
C     *****     LATEST CHANGE 01OCT82
*C LINE3
*ID NM2*25
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OC. 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO ADD COLUMN HEADERS TO THE
*/ PRINTOUT OF THE TOTAL REVERBERATION TABLES.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER;
```

```
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: $MSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03,          SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3,
*/
*D NM2*24.1
C     *****      LATEST CHANGE 01OCT82
*I NM2*01.421
      PRINT 9240
*C NM2
*ID SONIN*11
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER:
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: $MSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25,          TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3,
*/
*D SONIN*10.1
C     *****      LATEST CHANGE 01OCT82
*C SONIN
*ID TITLE3*05
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER:
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: $MSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11,          SETDIP*09, SNOYSDP07,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3,
*/
*I TITLE3*01.4
C     *****      LATEST CHANGE 01OCT82
*C TITLE3
*ID SETDIP*09
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USER*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER:
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: $MSGTIT06, $OUTDAT2, $SONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05,          SNOYSDP07,
```

```
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D SETDIP*09.1
C     *****     LATEST CHANGE 01OCT82
*C SETDIP
*ID SNOYSDP07
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USFR*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER:
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: SMSGTIT06, SOUTDAT2, SSONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09,
*/ SNOYSVD11, VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D SNOYSDP06.1
C     *****     LATEST CHANGE 01OCT82
*C SNOYSDP
*ID SNOYSVD11
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USFR*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER:
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: SMSGTIT06, SOUTDAT2, SSONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/           VDSLVL*06, CONVERT08 IN SHARP3.
*/
*D SNOYSVD10.1
C     *****     LATEST CHANGE 01OCT82
*C SNOYSVD
*ID VDSLVL*06
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS IDENT IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS:
*/ USFR*12, SLARAYU02, STARAYU02, LINEU*04, TITLEU*04, UNSORTU05 IN USER:
*/ SLARAYP02, STARAYP02, POSTSRT09, TITLEP*04, LINEP*04, UNSORTP05 IN
*/ POSTSORT: SMSGTIT06, SOUTDAT2, SSONTAB03, SHARBLK11, SHARP3*24,
*/ ENVIN*29, MSGLINE17, MSGPRT*22, RANGER320, STDEPTH17, TITLINE07,
*/ LINE3*03, NM2*25, SONIN*11, TITLE3*05, SETDIP*09, SNOYSDP07,
*/ SNOYSVD11,          CONVERT08 IN SHARP3.
*/
*D VDSLVL*05.1
C     *****     LATEST CHANGE 01OCT82
*C VDSLVL
```

APPENDIX H

SAMPLE SHARPS 18.8 OUTPUT

SHARPS III PREDICTION BASED ON 10 10Z SEP 82 DATA

```
01SP/FOTS 81032700Z MO/ 17.5/1513/   32/ 17.5/1514,   34/ 17.5/1514
   90/ 16.0/1510,  140/ 13.9/1504,  180/ 12.2/1499,  200/ 11.5/1497
  240/ 10.4/1494,  300/  9.0/1491,  400/  7.9/1488,  500/  7.0/1487
  800/  5.2/1484, 1200/  3.9/1486, 2000/  2.4/1493, 2200/  2.2/1496
 3000/  2.0/1509, 4000/  1.9/1526, 4206/  1.9/1529
DPX(3260/  943)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(4206)SLD(  34)
DP TGT   95 AVG SVL  1501 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6      7/ 20                             81/  81
       80      1/ 18                             49/  49
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     75/ 46  59/ 43  23/ 35   11/ 31  459/ 630
      150     55/ 56  51/ 55  44/ 48    1/ 37  418/ 418
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     78/ 47  75/ 46  23/ 39   12/ 33  459/ 630
      150     57/ 58  55/ 56  47/ 53   37/ 44  418/ 418

05FA/FOTS 81032700Z MO/ 20.7/1523/   81/ 18.5/1518,  101/ 17.6/1516
  121/ 17.0/1514,  140/ 16.0/1512,  160/ 14.9/1509,  199/ 13.5/1505
  300/ 11.3/1499,  400/  9.5/1494,  600/  5.6/1482,  650/  5.2/1481
  700/  4.8/1481,  800/  4.1/1479, 1400/  2.6/1484, 1800/  2.1/1489
 2100/  2.0/1493, 2600/  1.8/1501, 3000/  1.5/1507, 5121/  1.5/1544
DPX(3937/ 1183)GR( 2.0)BL(1/1)WH( 1)WS(13)BD(5121)SLD(   0)
DP TGT   61 AVG SVL  1506 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6     22/ 22                             33/  33
       80      1/  1                             62/  62
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     34/ 34  34/ 34  34/ 34   33/ 32  384/ 675
      150     63/ 63  58/ 56  46/ 46    1/  1  153/ 610
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     34/ 34  34/ 34  34/ 34   34/ 34  384/ 675
      150     65/ 66  63/ 63  53/ 52    1/  1  153/ 610

08SP/FOTS 81032700Z MO/ 19.2/1519/   17/ 19.2/1520,   18/ 19.2/1520
   40/ 19.2/1517,   60/ 17.5/1515,   89/ 17.0/1514,  120/ 17.0/1515
  150/ 16.8/1515,  191/ 16.4/1514,  300/ 15.6/1514,  400/ 14.1/1510
  510/ 12.0/1505,  600/  9.1/1496,  700/  6.6/1488,  800/  5.0/1483
  900/  4.4/1482, 1200/  3.2/1483, 1600/  2.5/1487, 1900/  2.1/1490
 2400/  1.8/1497, 3475/  1.6/1515, 4000/  1.6/1524, 6000/  1.6/1561
 6949/  1.6/1578
DPX(3675/ 3273)GR( 2.0)BL(1/1)WH( 1)WS(12)BD(6949)SLD(  18)
DP TGT   79 AVG SVL  1523 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6      1/ 22                             32/  32
       80      1/  1                             49/  49
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     34/ 33  34/ 31  31/ 23   10/  1  192/ 657
      150     68/100  67/ 94  66/ 56    1/  1  157/ 607
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     34/ 34  34/ 33  33/ 25   30/  1  192/ 657
      150     68/103  68/100  67/ 82   63/ 94  157/ 607
```

```
09SM/FOTS 81032700Z MO/ 18.0/1515/   19/ 18.0/1515,   20/ 18.0/1515
   40/ 12.8/1499,   60/  9.4/1488,   80/  7.1/1480,  120/  4.3/1469
  170/  2.8/1463,  220/  1.9/1460,  300/   .8/1457,  400/   .4/1457
  500/   .3/1458,  600/   .2/1459,  700/   .2/1461, 2195/   .1/1485
DRX(3942/-1748)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(2195)SLD(  20)
DP TGT   81 AVG SVL  1470 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6      6/  1                                77/  77
       80      1/ 22                                32/  32
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     67/ 32  52/ 28  25/ 23   11/  1  491/ 491
      150     33/ 34  31/ 34  27/ 34   20/ 27  384/ 384
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     73/ 34  67/ 32  34/ 26   46/  1  491/ 491
      150     34/ 34  33/ 34  28/ 34   22/ 32  384/ 384

SBFO/FOTS 81032700Z MO/ 10.4/1492/   28/ 10.4/1492,   29/ 10.4/1492
   60/  8.9/1487,   80/  8.8/1487,  182/  8.8/1489
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 182)SLD(  29)
DP TGT   90 AVG SVL  1488 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6      1/  1                                82/  82
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     84/ 56  79/ 53  68/ 48    9/  1  204/ 204
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     86/ 57  84/ 56  74/ 50   77/  1  204/ 204

SBWI/FOTS 81032700Z MO/  5.5/1473/   19/  5.5/1473,   20/  5.5/1473
   40/  5.8/1475,   60/  5.6/1474,  182/  5.6/1477
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 182)SLD(  40)
DP TGT  101 AVG SVL  1475 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6      1/  1                                64/  64
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     65/ 58  58/ 55  47/ 45    8/  1  194/ 194
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     67/ 60  65/ 58  53/ 50   11/  1  194/ 194
```

```
60SP/FOTS 81032700Z MO/ 17.8/1519/   19/ 17.8/1519,   20/ 17.8/1519
   40/ 14.9/1511,  100/ 13.8/1508,  120/ 13.5/1508,  150/ 13.5/1508
  300/ 13.8/1513,  400/ 13.7/1514,  500/ 13.7/1516,  560/ 13.6/1516
  600/ 13.5/1517,  900/ 13.0/1520, 1100/ 13.0/1523, 2700/ 13.0/1550
DRX(   0/    0)GR( 2.0)BL(1/1)WH( 1)WS(13)BD(2700)SLD(  20)
DP TGT   81 AVG SVL  1528 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6     . 1/  1                            61/  61
       80       1/  1                            45/  45
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6      61/ 27  55/ 23  42/ 18    1/  1  338/ 453
      150      56/112  56/104  56/ 83   51/ 89  322/ 443
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6      65/ 28  61/ 27  49/ 21    7/  1  338/ 453
      150      56/120  56/112  56/ 91   55/104  322/ 443

02HC/FOTS 81032700Z MO/ 20.7/1523/ 2700/ 13.0/1550,*****/  0.0/****
DRX(NA HALF CH)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(2700)SLD(2700)
DP TGT  385 AVG SVL  1527 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6      30/ 15                           114/ 114
       80       1/  1                           132/ 132
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     131/118 123/106 101/ 80  105/ 65  313/ 313
      150     121/133 109/116  82/ 85    1/ 21  521/ 521
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     134/126 131/118 111/ 90  123/105  313/ 313
      150     130/143 121/132  93/ 98   89/100  521/ 521

02NG/FOTS 81032700Z MO/ 20.7/1523/  400/ 16.7/1516,*****/  0.0/****
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 400)SLD(   0)
DP TGT   61 AVG SVL  1519 POD 50.

 SBA --HD--CW--0.1-----------------------------CDC/CDM-
        6       1/  1                           191/ 191
       80       1/  1                           111/ 111
 SBB --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     191/150 190/101 182/ 58  185/  1  718/ 718
 SBC --HD--CW--1.0-----0.5-----0.1--FM--1.0----CDC/CDM-
        6     193/159 191/150 187/ 79  190/  1  718/ 718
```

APPENDIX I

UPDATE CARD IMAGES FOR USER 17.9, POSTSORT 17.9, AND SHARPS 18.9 (SELF-NOISE)

```
*ID SNOYSU*02
*YANK SNOYSU*01
*ID USER*13
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO REVERT TO THE USE OF INPUTTING
*/ SELF-NOISE DATA FOR SEA STATES 1-5 ONLY, AND TRUNCATING SEA STATES
*/ TO 5 IF WAVE HEIGHTS ARE TOO HIGH.  ADDITIONALLY, SHARPS WILL DERIVE
*/ SELF-NOISE VALUES USING WINDSPEED TO INTERPOLATE BETWEEN INPUT
*/ NOISE VS. SEA STATE TABLES.  THIS CHANGE IS INTENDED TO GAIN BETTER
*/ AGREEMENT WITH FLEET GUIDANCE AND WITH SIMAS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - SNOYSU*02
*/ IN POSTSORT- SNOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- SSONDES08, ENVIN*38, NOISEJ*07, SLFNOYS09, SNOYSOP08,
*/             SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/             RANGER321, SEAV*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*YANK USER*10
*D USER*11.3
C     *****     LATEST CHANGE - 01 OCT 82
*D USER.398
      IF (SSNOYS(N,N) + 50.0 .LT. SSNOYS(N,N-1) )
*D USER.784
*D USER*11.60
      PRINT 8210,IP,PSPEED(J), (SSNOYS(K1,J),K1=1,5),
*C USER
```

```
*ID SNOYSP*02
*YANK SNOYSP*01
*ID POSTSRT10
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO REVERT TO THE USE OF INPUTTING
*/ SELF-NOISE DATA FOR SEA STATES 1-5 ONLY, AND TRUNCATING SEA STATES
*/ TO 5 IF WAVE HEIGHTS ARE TOO HIGH.  ADDITIONALLY, SHARPS WILL DERIVE
*/ SELF-NOISE VALUES USING WINDSPEED TO INTERPOLATE BETWEEN INPUT
*/ NOISE VS. SEA STATE TABLES.  THIS CHANGE IS INTENDED TO GAIN BETTER
*/ AGREEMENT WITH FLEET GUIDANCE AND WITH SIMAS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - SNOYSU*02,USER*13
*/ IN POSTSORT- SNOYSP*02,          NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/            SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/            RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*YANK POSTSRT07
*D POSTSRT08.3
C     *****     LATEST CHANGE - 01 OCT 82
*C POSTSRT
*ID NOISEP*04
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO REVERT TO THE USE OF INPUTTING
*/ SELF-NOISE DATA FOR SEA STATES 1-5 ONLY, AND TRUNCATING SEA STATES
*/ TO 5 IF WAVE HEIGHTS ARE TOO HIGH.  ADDITIONALLY, SHARPS WILL DERIVE
*/ SELF-NOISE VALUES USING WINDSPEED TO INTERPOLATE BETWEEN INPUT
*/ NOISE VS. SEA STATE TABLES.  THIS CHANGE IS INTENDED TO GAIN BETTER
*/ AGREEMENT WITH FLEET GUIDANCE AND WITH SIMAS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - SNOYSU*02,USER*13
*/ IN POSTSORT- SNOYSP*02, POSTSRT10
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/            SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/            RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D NOISEP*03.1
C     *****     LATEST CHANGE - 01 OCT 82
*YANK NOISEP*03
*C NOISEP
```

```
*ID $SONDESUB
*D $SONDES07.7
     7          NOYSUP, PSPEED(150), SSNOYS(5,150)
*YANK $SONDES06
*D $SONDES05.7
*ID ENVIN*30
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO REVERT TO THE USE OF INPUTTING
*/ SELF-NOISE DATA FOR SEA STATES 1-5 ONLY, AND TRUNCATING SEA STATES
*/ TO 5 IF WAVE HEIGHTS ARE TOO HIGH.  ADDITIONALLY, SHARPS WILL DERIVE
*/ SELF-NOISE VALUES USING WINDSPEED TO INTERPOLATE BETWEEN INPUT
*/ NOISE VS. SEA STATE TABLES.  THIS CHANGE IS INTENDED TO GAIN BETTER
*/ AGREEMENT WITH FLEET GUIDANCE AND WITH SIMAS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08,            NOISE3*07, SLFNOYS09, SNOYSDP08,
*/             SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/             RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D ENVIN*28,1
C     *****     LATEST CHANGE - 01 OCT 82
*D ENVIN*23,21,29
*D ENVIN*23,30,46
C
C     ***********************************************************************
C
C          SEA STATE IS CURRENTLY LIMITED TO A MAXIMUM OF 5.
C
C     ***********************************************************************
C
      IF (SEASTA .GT. 5) SEASTA = 5
*C ENVIN
*ID NOISE3*07
*/
*/ PROGRAMMER = R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO REVERT TO THE USE OF INPUTTING
*/ SELF-NOISE DATA FOR SEA STATES 1-5 ONLY, AND TRUNCATING SEA STATES
*/ TO 5 IF WAVE HEIGHTS ARE TOO HIGH.  ADDITIONALLY, SHARPS WILL DERIVE
*/ SELF-NOISE VALUES USING WINDSPEED TO INTERPOLATE BETWEEN INPUT
*/ NOISE VS. SEA STATE TABLES.  THIS CHANGE IS INTENDED TO GAIN BETTER
*/ AGREEMENT WITH FLEET GUIDANCE AND WITH SIMAS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30,            SLFNOYS09, SNOYSDP08,
*/             SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/             RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D NOISE3*06,1
C     *****     LATEST CHANGE - 01 OCT 82
*YANK NOISE3*05
*C NOISE3
*ID SLFNOYS09
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
```

```
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO REVERT TO THE USE OF INPUTTING
*/ SELF-NOISE DATA FOR SEA STATES 1-5 ONLY, AND TRUNCATING SEA STATES
*/ TO 5 IF WAVE HEIGHTS ARE TOO HIGH.  ADDITIONALLY, SHARPS WILL DERIVE
*/ SELF-NOISE VALUES USING WINDSPEED TO INTERPOLATE BETWEEN INPUT
*/ NOISE VS. SEA STATE TABLES.  THIS CHANGE IS INTENDED TO GAIN BETTER
*/ AGREEMENT WITH FLEET GUIDANCE AND WITH SIMAS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07,              SNOYSDP08,
*/            SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/            RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D SLFNOYS08.1
C     *****     LATEST CHANGE - 01 OCT 82
*I SLFNOYS.14
      DIMENSION WINDS(6)
*I SLFNOYS.16
      DATA (WINDS(I),I=1,6) / 5.0, 9.0, 13.0, 18.0, 23.0, 28.0 /
C
C           WINDS HOLDS THE WIND SPEEDS (KNOTS) CORRESPONDING TO SEA
C           STATES ONE THROUGH SIX.
C
*I SLFNOYS.26
C
C           DETERMINE RELEVANT SEA STATE INDEXES (ISS AND K).
C
      WS0 = AMAX1(WINDSP, 5.0)
      DO 20 IX = 2,5
        ISS = IX
        IF (WS0 .LE. WINDS(IX) ) GO TO 40
   20 CONTINUE
C
   40 CONTINUE
C
      K = ISS - 1
C
C           DETERMINE INTERPOLATION FACTOR.
C
      FRCT = (WS0 - WINDS(K) ) / (WINDS(ISS) - WINDS(K) )
*D SLFNOYS03.3
      SNOISE = EXP(E10D10 * (SSNOYS(K,J) + FRCT *
     1           (SSNOYS(ISS,J) - SSNOYS(K,J) ) ) )
*D SLFNOYS03.4
*D SLFNOYS01.5,7
      SHPNL = SSNOYS(K,J-1) + (SPEEDTB(I) - PSPEED(J-1) )
     1         * (SSNOYS(K,J) - SSNOYS(K,J-1) )
     2         / (PSPEED(J) - PSPEED(J-1) )
      SHPNH = SSNOYS(ISS,J-1) + (SPEEDTB(I) - PSPEED(J-1) )
     1         * (SSNOYS(ISS,J) - SSNOYS(ISS,J-1) )
     2         / (PSPEED(J) - PSPEED(J-1) )
      SNOISE = EXP(E10D10 * (SHPNL + FRCT * (SHPNH - SHPNL) ) )
*C SLFNOYS
*ID SNOYSDP08
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO REVERT TO THE USE OF INPUTTING
*/ SELF-NOISE DATA FOR SEA STATES 1-5 ONLY, AND TRUNCATING SEA STATES
*/ TO 5 IF WAVE HEIGHTS ARE TOO HIGH.  ADDITIONALLY, SHARPS WILL DERIVE
*/ SELF-NOISE VALUES USING WINDSPEED TO INTERPOLATE BETWEEN INPUT
*/ NOISE VS. SEA STATE TABLES.  THIS CHANGE IS INTENDED TO GAIN BETTER
```

```
*/  ... FLEET WITH FLEET GUIDANCE AND WITH SIMAS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDESUB, ENVIN*30, NOISE3*07, SLFNOYS09,
*/             SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/             RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D SNOYSDP06.1
C     *****     LATEST CHANGE - 01 OCT 82
*D SNOYSDP05.1
*YANK SNOYSDP05
*C SNOYSDP
*ID SONIN*12
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO REVERT TO THE USE OF INPUTTING
*/ SELF-NOISE DATA FOR SEA STATES 1-5 ONLY, AND TRUNCATING SEA STATES
*/ TO 5 IF WAVE HEIGHTS ARE TOO HIGH.  ADDITIONALLY, SHARPS WILL DERIVE
*/ SELF-NOISE VALUES USING WINDSPEED TO INTERPOLATE BETWEEN INPUT
*/ NOISE VS. SEA STATE TABLES.  THIS CHANGE IS INTENDED TO GAIN BETTER
*/ AGREEMENT WITH FLEET GUIDANCE AND WITH SIMAS.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/                      SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/             RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D SONIN*10.1
C     *****     LATEST CHANGE - 01 OCT 82
*YANK SONIN*09
*I SONIN.47
C
C          THE FOLLOWING CHECK IS TO MAKE THE CURRENT VERSION OF
C          SHARPS COMPATIBLE WITH SONAR DESCRIPTION FILES THAT HAVE
C          SELF-NOISE VALUES FOR 9 SEA STATES.  ON THOSE FILES
C          NOYSUP HAS BEEN INCREMENTED BY 10000 TO SIGNAL 9 SEA STATES.
C
      NSS = 5
      IF (NOYSUP .GT. 10000)  NSS = 9
      IF (NOYSUP .GT. 10000)  NOYSUP = NOYSUP - 10000
*D SONIN.90,91
      IF (NSS .EQ. 5)  READ(10) (PSPEED(I), (SSNOYS(J,I), J=1,5),
     1                 I=1,NOYSUP)
C
C          IF THERE ARE 9 SEA STATES READ THE EXTRA VALUES INTO DUMMY.
C
      IF (NSS .EQ. 9)  READ(10) (PSPEED(I),( (SSNOYS(J,I),J=1,5),
     1                 DUMMY,DUMMY,DUMMY,DUMMY), I=1,NOYSUP)
C
*C SONIN
*ID SHARP3*25
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
```

```
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/            SONIN*12,              MSGLINE18, MSGPRT*23, NM2*26,
*/            RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D SHARP3*23.1
C     *****     LATEST CHANGE - 01 OCT 82
*C SHARP3
*ID MSGLINE18
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/            SONIN*12, SHARP3*25,             MSGPRT*23, NM2*26,
*/            RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D MSGLINE16.1
C     *****     LATEST CHANGE - 01 OCT 82
*C MSGLINE
*ID MSGPRT*23
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/            SONIN*12, SHARP3*25, MSGLINE18,             NM2*26,
*/            RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D MSGPRT*21.1
C     *****     LATEST CHANGE - 01 OCT 82
*C MSGPRT
*ID NM2*26
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/            SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23,
*/            RANGER321, SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D NM2*24.1
C     *****     LATEST CHANGE - 01 OCT 82
*C NM2
```

```
*ID RANGER321
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN $HARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/             SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/                       SEXY*07, SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D RANGER319.1
C     *****     LATEST CHANGE - 01 OCT 82
*C RANGER3
*ID SEXY*07
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN $HARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/             SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/             RANGER321,           SNOYSVD12, UNSORT307, VDSLVL*07
*/
*D SEXY*06.1
C     *****     LATEST CHANGE - 01 OCT 82
*C SEXY
*ID SNOYSVD12
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN $HARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/             SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/             RANGER321, SEXY*07,             UNSORT307, VDSLVL*07
*/
*D SNOYSVD10.1
C     *****     LATEST CHANGE - 01 OCT 82
*C SNOYSVD
*ID UNSORT307
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
```

```
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/            SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/            RANGER321, SEXY*07, SNOYSVD12,            VDSLVL*07
*/
*D UNSORT304.1
C     *****     LATEST CHANGE - 01 OCT 82
*C UNSORT3
*ID VDSLVL*07
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO CAUSE RECOMPILATION OF THIS
*/ SUBROUTINE NECESSITATED BY CHANGES TO COMDECKS APPEARING IN THE
*/ SUBROUTINE.
*/
*/ THIS UPDATE IS IMPLEMENTED IN CONJUNCTION WITH THE FOLLOWING IDENTS-
*/ IN USER - $NOYSU*02,USER*13
*/ IN POSTSORT- $NOYSP*02, POSTSRT10, NOISEP*04
*/ IN SHARPS- $SONDES08, ENVIN*30, NOISE3*07, SLFNOYS09, SNOYSDP08,
*/            SONIN*12, SHARP3*25, MSGLINE18, MSGPRT*23, NM2*26,
*/            RANGER321, SEXY*07, SNOYSVD12, UNSORT307
*/
*D VDSLVL*05.1
C     *****     LATEST CHANGE - 01 OCT 82
*C VDSLVL
```

APPENDIX J

SAMPLE SHARPS 18.0 OUTPUT FOR SELF-NOISE UPDATES

SHARPS III PREDICTION BASED ON 08 14Z SEP 82 DATA

SNY1/FOTS 82090300Z M0/ 18.7/1519/ 20/ 18.8/1519, 800/ 5.2/1485
 1000/ 3.7/1482, 1600/ 2.2/1486, 2000/ 2.1/1492, 5000/ 1.5/1542
DRX(3599/ 1399)GR(2.0)BL(1/1)WH(2)WS(10)BD(5000)SLD(20)
DP TGT 81 AVG SVL 1507 POD 50.

SNA	---12KTS------	18KTS------	24KTS----------		CDC/CDM-
ALL	22/ 33	22/ 22	20/ 16		971/1254
SNB	---12KTS------	18KTS------	24KTS-----CZW----		CDC/CDM-
MD/1	45/ 40	45/ 39	29/ 38	-	1782/2509
MD/2	23/ 31	23/ 31	23/ 30		1782/2509
SNC	---12KTS------	18KTS------	24KTS-----CZW----		CDC/CDM-
GUD	69/ 40	54/ 39	39/ 39		1120/2509
BTR	99/ 41	87/ 41	77/ 40	-	1570/2509
PSV OT	32 - 32/	45 - 45	NSY 89 -1881/	49 -1254	
SND	---12KTS------	18KTS------	24KTS----------		CDC/CDM-
GUD	61/ 40	41/ 39	12/ 38		958/1881
BTR	79/ 42	66/ 40	43/ 39		1120/1881
SNE	---12KTS------	18KTS------	24KTS-----CZW----		CDC/CDM-
GUD	82/ 43	58/ 40	23/ 35		1887/2509
BST	115/ 45	92/ 44	56/ 39	626-636	2099/3136
BB	MIN-A/R 25/223	MAXSE-A/R 25/244	MAX-A/R 25/244		
PSV OT	63 - 63/	46 - 46	NSY 199 -1254/	49 - 688	
SNF	---12KTS------	18KTS------	24KTS-----CZW----		CDC/CDM-
GUD	127/ 45	104/ 45	78/ 42		1887/2509
BST	154/ 45	138/ 45	110/ 45	625-671	2099/3136
BB	MIN-A/R 25/223	MAXSE-A/R 15/403	MAX-A/R 15/446		
PSV OT	146 - 672/	49 - 648	NSY 515 -1881/	525 -1881	
SNG	---12KTS------	18KTS------	24KTS-----CZW----		CDC/CDM-
GUD	115/ 45	112/ 45	105/ 45		1887/2509
BST	150/ 45	146/ 45	139/ 45	625-669	2099/3136
BB	MIN-A/R 25/223	MAXSE-A/R 15/388	MAX-A/R 15/433		
PSV OT	137 - 667/	49 - 642	NSY 324 -1881/	461 -1254	
SNH	---12KTS------	18KTS------	TD----------		CDC/CDM-
GUD	37/ 45	37/ 45	45		811/ 811
BTR	37/ 45	37/ 45	45		925/ 925
GUDP	37/ 45	37/ 45	45		811/ 811
BTRP	37/ 45	37/ 45	45		925/ 925
SNI	29/ 34	DD 5	PSV 1 - 1	CDC 946	CDM 1286

```
SNY2/EOTS 82090300Z MO/ 18.7/1519/   20/ 18.8/1519.  800/  5.2/1485
 1000/  3.7/1482. 1600/  2.2/1486. 2000/  2.1/1492. 5000/  1.5/1542
DRX(3599/ 1399)GR( 2.0)BL(1/1)WH( 3)WS(20)BD(5000)SLD(  20)
OP TGT   81 AVG SVL  1507 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1          971/1254
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1    1/ 39       1/ 39       1/ 38      -   1676/2509
  MD/2    1/  1       1/  1       1/  1          1676/2509
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    53/ 40      44/ 39      12/ 39          975/1881
  BTR    81/ 40      74/ 40      55/ 40      -  1358/2509
  PSV QT    32 -  32/  45 -  45 NSY   89 -1254/  49 -1254
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD    47/ 40      11/ 39      11/ 38          943/1881
  BTR    53/ 40      51/ 40      36/ 39         1067/1881
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    60/ 40      43/ 39      16/ 33         1676/2509
  BST    87/ 43      74/ 40      44/ 39  628-633 1887/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT    32 -  32/  37 -  37 NSY  128 - 671/  49 -  647
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    90/ 41      79/ 41      56/ 40         1676/2509
  BST   117/ 43     105/ 43      84/ 43  625-663 1887/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT   103 - 654/  48 - 631 NSY  221 -1254/  49 -1254
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    89/ 41      87/ 41      80/ 41         1676/2509
  BST   113/ 43     112/ 43     106/ 43  625-661 1887/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT    96 - 644/  48 -  48 NSY  214 -1254/  49 -1254
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    33/ 43      33/ 43      45              796/ 796
  BTR    33/ 43      33/ 43      45              914/ 914
  GUDP   33/ 43      33/ 43      45              796/ 796
  BTRP   33/ 43      33/ 43      45              914/ 914
 SNI     11/ 33      DD   5       PSV    1 -   1    CDC  922 CDM 1286
```

```
SNY3/FOTS 82090300Z MO/ 18.7/1519/   20/ 18.8/1519, 800/  5.2/1485
 1000/  3.7/1482, 1600/  2.2/1486, 2000/  2.1/1492, 5000/  1.5/1542
DRX(3599/ 1399)GR( 2.0)BL(1/1)WH( 5)WS(30)BD(5000)SLD(  20)
DP TGT   81 AVG SVL  1507 POD 50. CZ WS LIMITED

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1            971/1254
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1    1/ 34       1/ 34       1/ 34      -    1676/2509
  MD/2    1/  1       1/  1       1/  1           1570/2509
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    48/ 39      35/ 39      11/ 39           960/1881
  BTP    49/ 39      49/ 39      49/ 39      -    1279/2509
  PSV QT    32 -  32/  44 -  44 NSY   89 -1254/  49 - 660
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD     7/ 39       7/ 39       7/ 38           938/1881
  BTP     7/ 39       7/ 39       7/ 39           1015/1881
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    52/ 39      40/ 39       1/ 33           1570/2509
  BST    77/ 40      56/ 40      41/ 39      -    1782/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT    31 -  31/  36 -  36 NSY  113 - 670/  49 - 644
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    76/ 39      71/ 39      50/ 39           1570/2509
  BST    88/ 40      88/ 40      76/ 40      -    1782/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT    92 - 652/  48 - 629 NSY  192 -1254/  49 -1254
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    76/ 39      73/ 39      71/ 39           1570/2509
  BST    88/ 40      88/ 40      88/ 40      -    1782/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT    86 - 642/  48 -  48 NSY  175 -1254/  49 -1254
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD     1/ 20       1/ 20      45               788/ 788
  BTP     1/ 20       1/ 20      45               910/ 910
  GUDP    1/ 20       1/ 20      45               788/ 788
  BTPP    1/ 20       1/ 20      45               910/ 910
 SNI      8/ 33      DD   5       PSV    1 -   1    CDC  S.J CDM 1286
```

APPENDIX K

SAMPLE SHARPS 18.9 OUTPUT FOR SELF-NOISE UPDATES

SHARPS III PREDICTION BASED ON 03 16Z SEP 82 DATA

SNY1/FOTS 82090300Z MO/ 18.7/1519/ 20/ 18.8/1519, 800/ 5.2/1485
1000/ 3.7/1482, 1600/ 2.2/1486, 2000/ 2.1/1492, 5000/ 1.5/1542
DRX(3599/ 1399)GR(2.0)BL(1/1)WH(2)WS(10)BD(5000)SLD(20)
DP TGT 81 AVG SVL 1507 POD 50.

SNA	12KTS	18KTS	24KTS		CDC/CDM
ALL	22/ 33	22/ 22	20/ 16		971/1254

SNB	12KTS	18KTS	24KTS	CZW	CDC/CDM
MD/1	45/ 40	45/ 39	29/ 38	-	1782/2509
MD/2	23/ 31	23/ 31	23/ 30		1782/2509

SNC	12KTS	18KTS	24KTS	CZW	CDC/CDM
GUN	69/ 40	54/ 39	39/ 39		1120/2509
BTR	99/ 41	87/ 41	77/ 40	-	1570/2509

PSV QT 32 - 32/ 45 - 45 NSY 89 -1881/ 49 -1254

SND	12KTS	18KTS	24KTS		CDC/CDM
GUN	61/ 40	41/ 39	12/ 38		958/1881
BTR	79/ 42	66/ 40	43/ 39		1120/1881

SNE	12KTS	18KTS	24KTS	CZW	CDC/CDM
GUN	92/ 44	72/ 40	34/ 38		1887/2509
BST	125/ 45	102/ 45	75/ 41	625-646	2099/3136

BB MIN-A/R 25/223 MAXSE-A/R 20/283 MAX-A/R 20/311

PSV QT 96 - 96/ 48 - 48 NSY 238 -1254/ 49 -1254

SNF	12KTS	18KTS	24KTS	CZW	CDC/CDM
GUN	133/ 45	118/ 45	89/ 44		1887/2509
BST	168/ 45	152/ 45	123/ 45	625-673	2099/3136

BB MIN-A/R 25/223 MAXSE-A/R 15/432 MAX-A/R 10/517

PSV QT 184 -1254/ 49 - 674 NSY 608 -1881/ 645 -1881

SNG	12KTS	18KTS	24KTS	CZW	CDC/CDM
GUN	129/ 45	126/ 45	117/ 45		1887/2509
BST	164/ 45	161/ 45	152/ 45	625-673	2099/3136

BB MIN-A/R 25/223 MAXSE-A/R 15/418 MAX-A/R 10/496

PSV QT 174 - 691/ 49 - 659 NSY 586 -1881/ 584 -1881

SNH	12KTS	18KTS	TD	CDC/CDM
GUN	37/ 45	37/ 45	45	811/ 811
BTR	37/ 45	37/ 45	45	925/ 925
GUNP	37/ 45	37/ 45	45	811/ 811
BTRP	37/ 45	37/ 45	45	925/ 925

SNI 20/ 34 DD 5 PSV 1 - 1 CDC 946 CDM 1286

```
SNY2/FOTS 82090300Z MO/ 18.7/1519/   20/ 18.8/1519, 800/  5.2/1485
 1000/  3.7/1482, 1600/  2.2/1486, 2000/  2.1/1492, 5000/  1.5/1542
DRX(3599/ 1399)GR( 2.0)BL(1/1)WH( 3)WS(20)BD(5000)SLD(  20)
DP TGT   81 AVG SVL  1507 POD 50.


 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1           971/1254

 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1    1/ 39       1/ 39       1/ 38      -    1676/2509
  MD/2    1/  1       1/  1       1/  1           1676/2509

 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    53/ 40      44/ 39      12/ 39           975/1881
  BTR    81/ 40      74/ 40      55/ 40      -   1358/2509
  PSV QT    32 -  32/  45 -  45 NSY   89 -1254/  49 -1254

 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD    47/ 40      11/ 39      11/ 38           943/1881
  BTR    53/ 40      51/ 40      36/ 39          1067/1881

 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    66/ 40      45/ 39      17/ 33          1676/2509
  BST    90/ 43      76/ 41      45/ 39  626-635 1887/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT    44 -  44/  43 -  43 NSY  145 - 677/  49 - 655

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    95/ 41      84/ 41      62/ 40          1676/2509
  BST   121/ 43     109/ 43      88/ 43  625-668 1887/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT   112 - 663/  49 - 638 NSY  312 -1254/ 310 -1254

 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    91/ 41      89/ 41      85/ 41          1676/2509
  BST   118/ 43     115/ 43     110/ 43  625-663 1887/2509
  BB  MIN-A/R     /     MAXSE-A/R     /     MAX-A/R     /
  PSV QT   106 - 656/  48 - 633 NSY  223 -1254/  49 -1254

 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    33/ 43      33/ 43      45               796/ 796
  BTR    33/ 43      33/ 43      45               914/ 914
  GUDP   33/ 43      33/ 43      45               796/ 796
  BTRP   33/ 43      33/ 43      45               914/ 914

 SNI     11/ 33      DD   5       PSV    1 -   1    CDC  922 CDM 1286
```

```
SNY3/FOTS 82090300Z MO/ 18.7/1519/   20/ 18.8/1519,  800/  5.2/1485
 1000/  3.7/1482, 1600/  2.2/1486, 2000/  2.1/1492, 5000/  1.5/1542
ORX(3599/ 1399)GR( 2.0)BL(1/1)WH( 5)WS(30)BD(5000)SLD(  20)
OP TGT   81 AVG SVL  1507 POD 50. CZ WS LIMITED

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1            971/1254

 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1    1/ 34       1/ 34       1/ 34      -    1676/2509
  MD/2    1/  1       1/  1       1/  1          1570/2509

 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    48/ 39      35/ 39      11/ 39          960/1881
  BTR    49/ 39      49/ 39      49/ 39      -   1279/2509
  PSV OT    32 -  32/  44 -  44 NSY   89 -1254/  49 - 660

 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD     7/ 39       7/ 39       7/ 38           938/1881
  BTR     7/ 39       7/ 39       7/ 39          1015/1881

 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    43/ 39       1/ 39       1/ 31          1570/2509
  BST    56/ 40      56/ 40      36/ 39      -   1782/2509
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV OT    16 -  16/  25 -  25 NSY   83 - 640/  48 -  48

 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    72/ 39      55/ 39      41/ 39          1570/2509
  BST    88/ 40      86/ 40      56/ 40      -   1782/2509
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV OT    75 -  75/  48 -  48 NSY  164 -1254/  49 - 682

 SNG ---12KTS------18KT------24KTS-----CZW----CDC/CDM-
  GUD    71/ 39      71/ 39      55/ 39          1570/2509
  BST    88/ 40      88/ 40      87/ 40      -   1782/2509
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV OT    69 -  69/  47 -  47 NSY  158 -1254/  49 - 670

 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD     1/ 20       1/ 20      45              788/ 788
  BTR     1/ 20       1/ 20      45              910/ 910
  GUDP    1/ 20       1/ 20      45              788/ 788
  BTDP    1/ 20       1/ 20      45              910/ 910

 SNI      8/ 33     DD   5      PSV    1 -   1    CDC  910 COM 1286
```

APPENDIX L

UPDATE CARD IMAGES FOR SHARPS 18.11 (RAY ANGLE TREATMENT)

```
*ID EIGEN*18
*/
*/ PROGRAMMER - R. HOLT (OCEAN DATA SYSTEMS, INC.)
*/ DATE - 01 OCT 82
*/
*/ THE PURPOSE OF THIS UPDATE IS TO IMPLEMENT INTERIM TREATMENT OF
*/ DUCTED SURFACE REVERBERATI ANGLES AT THE SONAR AND SURFACE.
*/ THIS TREATMENT EMULATES THAT IN MODELS LIRA AND LORA WHICH PERFORM
*/ BETTER IN MATCHING ACTUAL SURFACE REVERBERATION DATA.  THE RAY
*/ ANGLES AT THE SONAR AND SURFACE ARE CALCULATED AS A FUNCTION OF THE
*/ VELOCITIES AT THE SURFACE, SONR, AND LAYER DEPTH.
*/
*D EIGEN*17.1
C     *****     LATEST CHANGE 01 OCT 82
*I EIGEN*17.180
C
C          FOR DUCTED RAYS TO A SURFACE TARGET, CHANGE THE RAY ANGLES AT
C          THE SONAR AND SURFACE TO BE A FUNCTION OF THE VELOCITIES AT
C          THE SURFACE, SONAR, AND LAYER DEPTH.  THIS IS TO EMULATE
C          ANGLE TREATMENT IN MODES LIRA AND LORA WHICH ARE BETTER
C          FOR MATCHING ACTUAL SURF REVERBERATION DATA.
C
      IF ( (   ZS .GT. ZL  ) .OR.
     1     (   ZT .NE. 0.0) .OR.
     2     (IAMOS .NE. 1   ) ) GO TO 11900
C
      SONANG = 0.5 * ACOS(VS/VL)
      SURANG = SIGN(ACOS(VT/VL) * COS(SONANG), -1.0)
      DO 11890 IXT = 1,NXT
        IF (NRAY(IXT) .LT. 1)  GO TO 11890
        IF (CVT(IXT,1) .GT. VL)  GO TO 1890
C
C          SONAR AND SURFACE ANGLES OF CURRENT RAY ARE TO BE OVERRIDDEN.
C
        ETAS(IXT,1) = SONANG
        ETAT(IXT,1) = SURANG
C
11890 CONTINUE
11900 CONTINUE
*C EIGEN
```

APPENDIX M

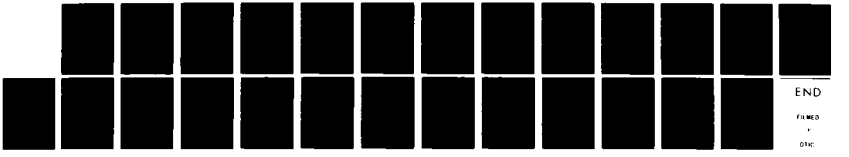
SAMPLE SHARPS 18.0 SURFACE REVERBERATION DATA

SURFACE REVERBERATION

I	TIME(I)	REVERB(I)	DB	I	TIME(I)	REVERB(I)	DB
1	.100000E+00	.535678E-08	-82.7	2	.648627E+00	.535678E-08	-82.7
3	.119725E+01	.162572E-08	-87.9	4	.174588E+01	.894435E-12	-120.5
5	.229451E+01	.894435E-12	-120.5	6	.284314E+01	.894435E-12	-120.5
7	.339176E+01	.464195E-13	-133.3	8	.394039E+01	.464195E-13	-133.3
9	.448902E+01	.464195E-13	-133.3	10	.503765E+01	.240313E-13	-136.2
11	.558627E+01	.164022E-14	-147.9	12	.613490E+01	.164022E-14	-147.9
13	.668353E+01	.104737E-13	-139.8	14	.723216E+01	.611009E-14	-142.1
15	.778078E+01	.304283E-15	-155.2	16	.832941E+01	.276183E-15	-155.6
17	.887804E+01	.111397E-15	-159.5	18	.942667E+01	.516868E-16	-162.9
19	.997529E+01	.424875E-16	-163.7	20	.105239E+02	.424875E-16	-163.7
21	.110725E+02	.982446E-17	-170.1	22	.116212E+02	.981365E-17	-170.1
23	.121698E+02	.981365E-17	-170.1	24	.127184E+02	.106112E-16	-169.7
25	.132671E+02	.832749E-17	-170.8	26	.138157E+02	.832989E-17	-170.8
27	.143643E+02	.759493E-17	-171.2	28	.149129E+02	.580607E-17	-172.4
29	.154616E+02	.561421E-17	-172.5	30	.160102E+02	.511535E-17	-172.9
31	.165588E+02	.517675E-17	-172.9	32	.171075E+02	.356663E-17	-174.5
33	.176561E+02	.365001E-17	-174.4	34	.182047E+02	.365001E-17	-174.4
35	.187533E+02	.298529E-17	-175.3	36	.193020E+02	.285443E-17	-175.4
37	.198506E+02	.287045E-17	-175.4	38	.203992E+02	.293562E-17	-175.3
39	.209478E+02	.168713E-17	-177.7	40	.214965E+02	.160363E-17	-177.9
41	.220451E+02	.160364E-17	-177.9	42	.225937E+02	.721043E-18	-181.4
43	.231424E+02	.787282E-18	-181.0	44	.236910E+02	.787282E-18	-181.0
45	.242396E+02	.787443E-18	-181.0	46	.247882E+02	.313813E-18	-185.0
47	.253369E+02	.313624E-18	-185.0	48	.258855E+02	.314343E-18	-185.0
49	.264341E+02	.979916E-19	-190.1	50	.269827E+02	.980376E-19	-190.1
51	.275314E+02	.976010E-19	-190.1	52	.280800E+02	.100213E-18	-190.0
53	.286286E+02	.876814E-19	-190.6	54	.291773E+02	.873697E-19	-190.6
55	.297259E+02	.698699E-19	-191.6	56	.302745E+02	.560146E-19	-192.5
57	.308231E+02	.558084E-19	-192.5	58	.313718E+02	.596379E-19	-192.2
59	.319204E+02	.515232E-19	-192.9	60	.324690E+02	.501742E-19	-193.0
61	.330176E+02	.501743E-19	-193.0	62	.335663E+02	.125262E-18	-189.0
63	.341149E+02	.121358E-18	-189.2	64	.346635E+02	.121358E-18	-189.2
65	.352122E+02	.202851E-18	-186.9	66	.357608E+02	.193842E-18	-187.1
67	.363094E+02	.193720E-18	-187.1	68	.368580E+02	.204094E-18	-186.9
69	.374067E+02	.198084E-18	-187.0	70	.379553E+02	.198057E-18	-187.0
	.385039E+02	.198011E-18	-187.0	72	.390525E+02	.151411E-18	-188.2
	.396012E+02	.148461E-18	-188.3	74	.401498E+02	.148535E-18	-188.3
	.406984E+02	.864982E-19	-190.6	76	.412471E+02	.851019E-19	-190.7
	.417957E+02	.851854E-19	-190.7	78	.423443E+02	.379579E-19	-194.2
	.428929E+02	.378640E-19	-194.2	80	.434416E+02	.373250E-19	-194.3
	.439902E+02	.373103E-19	-194.3	82	.445388E+02	.123036E-19	-199.1
	.450875E+02	.120628E-19	-199.2	84	.456361E+02	.118908E-19	-199.2
	.461847E+02	.261459E-20	-205.8	86	.467333E+02	.257595E-20	-205.9

AD-A121 780 SHARPS III UPDATE REVIEW--AUTUMN 1982(U) NAVAL OCEAN 2/2
RESEARCH AND DEVELOPMENT ACTIVITY NSTL STATION MS
R M HOLT 14 SEP 82 NORDA-TN-169

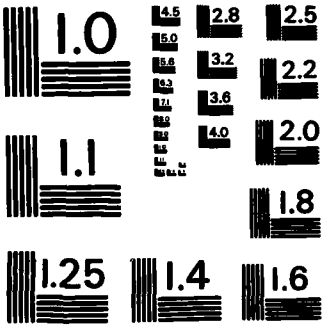
UNCLASSIFIED F/G 17/1 NL



END

FILMED

DTIC



87	.472820E+02	.236378E-20	-206.3	88	.478306E+02	.141986E-20	-208.5
89	.483792E+02	.545579E-21	-212.6	90	.489278E+02	.423022E-21	-213.7
91	.494765E+02	.422604E-21	-213.7	92	.500251E+02	.645881E-21	-211.9
93	.505737E+02	.616535E-21	-212.1	94	.511224E+02	.614607E-21	-212.1
95	.516710E+02	.706304E-21	-211.5	96	.522196E+02	.709241E-21	-211.5
97	.527682E+02	.712435E-21	-211.5	98	.533169E+02	.712272E-21	-211.5
99	.538655E+02	.452598E-21	-213.4	100	.544141E+02	.458372E-21	-213.4
101	.549627E+02	.458264E-21	-213.4	102	.555114E+02	.224381E-21	-216.5
103	.560600E+02	.219350E-21	-216.6	104	.566086E+02	.218631E-21	-216.6
105	.571573E+02	.223791E-21	-216.5	106	.577059E+02	.260731E-21	-215.8
107	.582545E+02	.259586E-21	-215.9	108	.588031E+02	.259565E-21	-215.9
109	.593518E+02	.595674E-21	-212.2	110	.599004E+02	.593989E-21	-212.3
111	.604490E+02	.593406E-21	-212.3	112	.609976E+02	.828364E-21	-210.8
113	.615463E+02	.103186E-20	-209.9	114	.620949E+02	.103153E-20	-209.9
115	.626435E+02	.103152E-20	-209.9	116	.631922E+02	.144071E-20	-208.4
117	.637408E+02	.144135E-20	-208.4	118	.642894E+02	.144116E-20	-208.4
119	.648380E+02	.167098E-20	-207.8	120	.653867E+02	.171705E-20	-207.7
121	.659353E+02	.171694E-20	-207.7	122	.664839E+02	.171694E-20	-207.7
123	.670325E+02	.171218E-20	-207.7	124	.675812E+02	.171234E-20	-207.7
125	.681298E+02	.171227E-20	-207.7	126	.686784E+02	.148461E-20	-208.3
127	.692271E+02	.148623E-20	-208.3	128	.697757E+02	.148619E-20	-208.3
129	.703243E+02	.148619E-20	-208.3	130	.708729E+02	.115864E-20	-209.4
131	.714216E+02	.115864E-20	-209.4	132	.719702E+02	.115863E-20	-209.4
133	.725188E+02	.860483E-21	-210.7	134	.730675E+02	.860483E-21	-210.7
135	.736161E+02	.860475E-21	-210.7	136	.741647E+02	.860042E-21	-210.7
137	.747133E+02	.678260E-21	-211.7	138	.752620E+02	.678260E-21	-211.7
139	.758106E+02	.678254E-21	-211.7	140	.763592E+02	.301849E-21	-215.2
141	.769078E+02	.301849E-21	-215.2	142	.774565E+02	.301846E-21	-215.2
143	.780051E+02	.280016E-21	-215.5	144	.785537E+02	.740334E-22	-221.3
145	.791024E+02	.740334E-22	-221.3	146	.796510E+02	.741201E-22	-221.3
147	.801996E+02	.674494E-17	-171.7	148	.807482E+02	.674494E-17	-171.7
149	.812969E+02	.674494E-17	-171.7	150	.818455E+02	.575133E-17	-172.4
151	.823941E+02	.440277E-18	-183.6	152	.829427E+02	.440277E-18	-183.6
153	.834914E+02	.440277E-18	-183.6	154	.840400E+02	.768205E-19	-191.1
155	.845886E+02	.768205E-19	-191.1	156	.851373E+02	.768205E-19	-191.1
157	.856859E+02	.763935E-19	-191.2	158	.862345E+02	.190950E-19	-197.2
159	.867831E+02	.190950E-19	-197.2	160	.873318E+02	.190448E-19	-197.2
161	.878804E+02	.616817E-20	-202.1	162	.884290E+02	.616817E-20	-202.1
163	.889776E+02	.616814E-20	-202.1	164	.895263E+02	.612048E-20	-202.1
165	.900749E+02	.370402E-22	-224.3	166	.906235E+02	.370402E-22	-224.3
167	.911722E+02	.100860E-22	-230.0	168	.917208E+02	.188725E-25	-257.2
169	.922694E+02	.188725E-25	-257.2	170	.928180E+02	.113906E-25	-259.4
171	.933667E+02	.113906E-25	-259.4	172	.939153E+02	.113906E-25	-259.4

173	.944639E+02	.108409E-25	-259.6	174	.950125E+02	.515677E-26	-262.9
175	.955612E+02	.602873E-26	-262.2	176	.961098E+02	.602870E-26	-262.2
177	.966584E+02	.385036E-26	-264.1	178	.972071E+02	.345549E-26	-264.6
179	.977557E+02	.345858E-26	-264.6	180	.983043E+02	.358744E-26	-264.5
181	.988529E+02	.312184E-26	-265.1	182	.994016E+02	.312444E-26	-265.1
183	.999502E+02	.312443E-26	-265.1	184	.100499E+03	.356855E-26	-264.5
185	.101047E+03	.341552E-26	-264.7	186	.101596E+03	.341552E-26	-264.7
187	.102145E+03	.375329E-26	-264.3	188	.102693E+03	.348399E-26	-264.6
189	.103242E+03	.348524E-26	-264.6	190	.103791E+03	.348524E-26	-264.6
191	.104339E+03	.315906E-26	-265.0	192	.104888E+03	.316155E-26	-265.0
193	.105436E+03	.316155E-26	-265.0	194	.105985E+03	.259856E-26	-265.9
195	.106534E+03	.256932E-26	-265.9	196	.107082E+03	.256932E-26	-265.9
197	.107631E+03	.230070E-26	-266.4	198	.108180E+03	.191571E-26	-267.2
199	.108728E+03	.191571E-26	-267.2	200	.109277E+03	.191571E-26	-267.2
201	.109825E+03	.137472E-26	-268.6	202	.110374E+03	.137483E-26	-268.6
203	.110923E+03	.137483E-26	-268.6	204	.111471E+03	.104031E-26	-269.8
205	.112020E+03	.105140E-26	-269.8	206	.112569E+03	.105140E-26	-269.8
207	.113117E+03	.105140E-26	-269.8	208	.113666E+03	.983638E-27	-270.1
209	.114215E+03	.983638E-27	-270.1	210	.114763E+03	.983638E-27	-270.1
211	.115312E+03	.115529E-26	-269.4	212	.115860E+03	.115323E-26	-269.4
213	.116409E+03	.115323E-26	-269.4	214	.116958E+03	.115323E-26	-269.4
215	.117506E+03	.150135E-26	-268.2	216	.118055E+03	.150135E-26	-268.2
217	.118604E+03	.150135E-26	-268.2	218	.119152E+03	.191054E-26	-267.2
219	.119701E+03	.191054E-26	-267.2	220	.120249E+03	.191054E-26	-267.2
221	.120798E+03	.197998E-26	-267.0	222	.121347E+03	.229918E-26	-266.4
223	.121895E+03	.229918E-26	-266.4	224	.122444E+03	.229918E-26	-266.4
225	.122993E+03	.263739E-26	-265.8	226	.123541E+03	.263739E-26	-265.8
227	.124090E+03	.263739E-26	-265.8	228	.124638E+03	.281226E-26	-265.5
229	.125187E+03	.289374E-26	-265.4	230	.125736E+03	.289374E-26	-265.4
231	.126284E+03	.289374E-26	-265.4	232	.126833E+03	.368432E-27	-274.3
233	.127382E+03	.368432E-27	-274.3	234	.127930E+03	.368432E-27	-274.3
235	.128479E+03	.225595E-29	-294.9	236	.129027E+03	.225595E-29	-294.9
237	.129576E+03	.225595E-29	-294.9	238	.130125E+03	.344169E-30	-298.7
239	.130673E+03	0.	-300.0	240	.131222E+03	0.	-300.0
241	.131771E+03	0.	-300.0	242	.132319E+03	0.	-300.0
243	.132868E+03	0.	-300.0	244	.133416E+03	0.	-300.0
245	.133965E+03	0.	-300.0	246	.134514E+03	0.	-300.0
247	.135062E+03	0.	-300.0	248	.135611E+03	0.	-300.0
249	.136160E+03	0.	-300.0	250	.136708E+03	0.	-300.0
251	.137257E+03	0.	-300.0	252	.137805E+03	0.	-300.0
253	.138354E+03	0.	-300.0	254	.138903E+03	0.	-300.0
255	.139451E+03	0.	-300.0	256	.140000E+03	0.	-300.0

APPENDIX N

SAMPLE SHARPS 18.11 SURFACE REVERBERATION DATA

SURFACE REVERBERATION

I	TIME(I)	REVERB(I)	DB	I	TIME(I)	REVERB(I)	DB
1	.100000E+00	.119983E-07	-79.2	2	.648627E+00	.119983E-07	-79.2
3	.119725E+01	.364181E-08	-84.4	4	.174588E+01	.265632E-11	-115.8
5	.229451E+01	.265632E-11	-115.8	6	.284314E+01	.265632E-11	-115.8
7	.339176E+01	.258419E-12	-125.9	8	.394039E+01	.258419E-12	-125.9
9	.448902E+01	.258419E-12	-125.9	10	.503765E+01	.133415E-12	-128.7
11	.558627E+01	.839256E-14	-140.8	12	.613490E+01	.839256E-14	-140.8
13	.668353E+01	.216588E-13	-136.6	14	.723216E+01	.951072E-14	-140.2
15	.778078E+01	.822135E-15	-150.9	16	.832941E+01	.777387E-15	-151.1
17	.887804E+01	.437149E-15	-153.6	18	.942667E+01	.166498E-15	-157.8
19	.997529E+01	.141898E-15	-158.5	20	.105239E+02	.141898E-15	-158.5
21	.110725E+02	.497639E-16	-163.0	22	.116212E+02	.497391E-16	-163.0
23	.121698E+02	.497391E-16	-163.0	24	.127184E+02	.507299E-16	-162.9
25	.132671E+02	.369008E-16	-164.3	26	.138157E+02	.369032E-16	-164.3
27	.143643E+02	.347542E-16	-164.6	28	.149129E+02	.246511E-16	-166.1
29	.154616E+02	.244586E-16	-166.1	30	.160102E+02	.231744E-16	-166.3
31	.165588E+02	.232136E-16	-166.3	32	.171075E+02	.166385E-16	-167.8
33	.176561E+02	.169452E-16	-167.7	34	.182047E+02	.169452E-16	-167.7
35	.187533E+02	.125665E-16	-169.0	36	.193020E+02	.124333E-16	-169.1
37	.198506E+02	.124523E-16	-169.0	38	.203992E+02	.125176E-16	-169.0
39	.209478E+02	.583354E-17	-172.3	40	.214965E+02	.574891E-17	-172.4
41	.220451E+02	.574893E-17	-172.4	42	.225937E+02	.231430E-17	-176.4
43	.231424E+02	.233122E-17	-176.3	44	.236910E+02	.233122E-17	-176.3
45	.242396E+02	.233166E-17	-176.3	46	.247882E+02	.836933E-18	-180.8
47	.253369E+02	.836744E-18	-180.8	48	.258855E+02	.838405E-18	-180.8
49	.264341E+02	.287112E-18	-185.4	50	.269827E+02	.287158E-18	-185.4
51	.275314E+02	.286145E-18	-185.4	52	.280800E+02	.255313E-18	-185.9
53	.286286E+02	.187446E-18	-187.3	54	.291773E+02	.186654E-18	-187.3
55	.297259E+02	.169154E-18	-187.7	56	.302745E+02	.126292E-18	-189.0
57	.308231E+02	.125943E-18	-189.0	58	.313718E+02	.129773E-18	-188.9
59	.319204E+02	.105420E-18	-189.8	60	.324690E+02	.987121E-19	-190.1
61	.330176E+02	.987122E-19	-190.1	62	.335663E+02	.161590E-18	-187.9
63	.341149E+02	.150763E-18	-188.2	64	.346635E+02	.150763E-18	-188.2
65	.352122E+02	.232253E-18	-186.3	66	.357608E+02	.209821E-18	-186.8
67	.363094E+02	.209202E-18	-186.8	68	.368580E+02	.219570E-18	-186.6
69	.374067E+02	.205908E-18	-186.9	70	.379553E+02	.205750E-18	-186.9
71	.385039E+02	.205674E-18	-186.9	72	.390525E+02	.159063E-18	-188.0
73	.396012E+02	.151871E-18	-188.2	74	.401498E+02	.151895E-18	-188.2
75	.406984E+02	.898509E-19	-190.5	76	.412471E+02	.864673E-19	-190.6
77	.417957E+02	.865409E-19	-190.6	78	.423443E+02	.393026E-19	-194.1
79	.428929E+02	.390738E-19	-194.1	80	.434416E+02	.378272E-19	-194.2
81	.439902E+02	.378059E-19	-194.2	82	.445388E+02	.127977E-19	-198.9
83	.450875E+02	.122416E-19	-199.1	84	.456361E+02	.120689E-19	-199.2
85	.461847E+02	.278979E-20	-205.5	86	.467333E+02	.269580E-20	-205.7

87	.472820E+02	.242370E-20	-206.2	88	.478306E+02	.147819E-20	-208.3
89	.483792E+02	.603907E-21	-212.2	90	.489278E+02	.444603E-21	-213.5
91	.494765E+02	.443561E-21	-213.5	92	.500251E+02	.666721E-21	-211.8
93	.505737E+02	.628831E-21	-212.0	94	.511224E+02	.624114E-21	-212.0
95	.516710E+02	.715529E-21	-211.5	96	.522196E+02	.718466E-21	-211.4
97	.527682E+02	.718162E-21	-211.4	98	.533169E+02	.717882E-21	-211.4
99	.538655E+02	.458193E-21	-213.4	100	.544141E+02	.462438E-21	-213.3
101	.549627E+02	.462096E-21	-213.4	102	.555114E+02	.228208E-21	-216.4
103	.560600E+02	.223177E-21	-216.5	104	.566086E+02	.221326E-21	-216.5
105	.571573E+02	.226465E-21	-216.4	106	.577059E+02	.263403E-21	-215.8
107	.582545E+02	.261309E-21	-215.8	108	.588031E+02	.261273E-21	-215.8
109	.593518E+02	.597381E-21	-212.2	110	.599004E+02	.595697E-21	-212.2
111	.604490E+02	.594477E-21	-212.3	112	.609976E+02	.829435E-21	-210.8
113	.615463E+02	.103293E-20	-209.9	114	.620949E+02	.103217E-20	-209.9
115	.626435E+02	.103215E-20	-209.9	116	.631922E+02	.144134E-20	-208.4
117	.637408E+02	.144198E-20	-208.4	118	.642894E+02	.144151E-20	-208.4
119	.648380E+02	.167134E-20	-207.8	120	.653867E+02	.171741E-20	-207.7
121	.659353E+02	.171713E-20	-207.7	122	.664839E+02	.171713E-20	-207.7
123	.670325E+02	.171236E-20	-207.7	124	.675812E+02	.171252E-20	-207.7
125	.681298E+02	.171236E-20	-207.7	126	.686784E+02	.148471E-20	-208.3
127	.692271E+02	.148633E-20	-208.3	128	.697757E+02	.148624E-20	-208.3
129	.703243E+02	.148624E-20	-208.3	130	.708729E+02	.115869E-20	-209.4
131	.714216E+02	.115869E-20	-209.4	132	.719702E+02	.115865E-20	-209.4
133	.725188E+02	.860505E-21	-210.7	134	.730675E+02	.860505E-21	-210.7
135	.736161E+02	.860486E-21	-210.7	136	.741647E+02	.860053E-21	-210.7
137	.747133E+02	.678271E-21	-211.7	138	.752620E+02	.678271E-21	-211.7
139	.758106E+02	.678258E-21	-211.7	140	.763592E+02	.301853E-21	-215.2
141	.769078E+02	.301853E-21	-215.2	142	.774565E+02	.301847E-21	-215.2
143	.780051E+02	.280017E-21	-215.5	144	.785537E+02	.740345E-22	-221.3
145	.791024E+02	.740343E-22	-221.3	146	.796510E+02	.742969E-22	-221.3
147	.801996E+02	.674494E-17	-171.7	148	.807482E+02	.674494E-17	-171.7
149	.812969E+02	.674494E-17	-171.7	150	.818455E+02	.575133E-17	-172.4
151	.823941E+02	.440278E-18	-183.6	152	.829427E+02	.440278E-18	-183.6
153	.834914E+02	.440277E-18	-183.6	154	.840400E+02	.768205E-19	-191.1
155	.845886E+02	.768205E-19	-191.1	156	.851373E+02	.768205E-19	-191.1
157	.856859E+02	.763935E-19	-191.2	158	.862345E+02	.190950E-19	-197.2
159	.867831E+02	.190950E-19	-197.2	160	.873318E+02	.190448E-19	-197.2
161	.878804E+02	.616818E-20	-202.1	162	.884290E+02	.616818E-20	-202.1
163	.889776E+02	.616814E-20	-202.1	164	.895263E+02	.612048E-20	-202.1
165	.900749E+02	.370402E-22	-224.3	166	.906235E+02	.370402E-22	-224.3
167	.911722E+02	.100860E-22	-230.0	168	.917208E+02	.188733E-25	-257.2
169	.922694E+02	.188732E-25	-257.2	170	.928180E+02	.113910E-25	-259.4
171	.933667E+02	.113910E-25	-259.4	172	.939153E+02	.113910E-25	-259.4

173	.944639E+02	.108411E-25	-259.6	174	.950125E+02	.515692E-26	-262.9
175	.955612E+02	.602888E-26	-262.2	176	.961098E+02	.602882E-26	-262.2
177	.966584E+02	.385043E-26	-264.1	178	.972071E+02	.345556E-26	-264.6
179	.977557E+02	.345865E-26	-264.6	180	.983043E+02	.358747E-26	-264.5
181	.988529E+02	.312187E-26	-265.1	182	.994016E+02	.312447E-26	-265.1
183	.999502E+02	.312445E-26	-265.1	184	.100499E+03	.356856E-26	-264.5
185	.101047E+03	.341554E-26	-264.7	186	.101596E+03	.341554E-26	-264.7
187	.102145E+03	.375330E-26	-264.3	188	.102693E+03	.348400E-26	-264.6
189	.103242E+03	.348525E-26	-264.6	190	.103791E+03	.348525E-26	-264.6
191	.104339E+03	.315906E-26	-265.0	192	.104888E+03	.316155E-26	-265.0
193	.105436E+03	.316155E-26	-265.0	194	.105985E+03	.259856E-26	-265.9
195	.106534E+03	.256932E-26	-265.9	196	.107082E+03	.256932E-26	-265.9
197	.107631E+03	.230070E-26	-266.4	198	.108180E+03	.191571E-26	-267.2
199	.108728E+03	.191571E-26	-267.2	200	.109277E+03	.191571E-26	-267.2
201	.109825E+03	.137472E-26	-268.6	202	.110374E+03	.137483E-26	-268.6
203	.110923E+03	.137483E-26	-268.6	204	.111471E+03	.104031E-26	-269.8
205	.112020E+03	.105140E-26	-269.8	206	.112569E+03	.105140E-26	-269.8
207	.113117E+03	.105140E-26	-269.8	208	.113666E+03	.983639E-27	-270.1
209	.114215E+03	.983639E-27	-270.1	210	.114763E+03	.983639E-27	-270.1
211	.115312E+03	.115529E-26	-269.4	212	.115860E+03	.115323E-26	-269.4
213	.116409E+03	.115323E-26	-269.4	214	.116958E+03	.115323E-26	-269.4
215	.117506E+03	.150135E-26	-268.2	216	.118055E+03	.150135E-26	-268.2
217	.118604E+03	.150135E-26	-268.2	218	.119152E+03	.191054E-26	-267.2
219	.119701E+03	.191054E-26	-267.2	220	.120249E+03	.191054E-26	-267.2
221	.120798E+03	.197998E-26	-267.0	222	.121347E+03	.229918E-26	-266.4
223	.121895E+03	.229918E-26	-266.4	224	.122444E+03	.229918E-26	-266.4
225	.122993E+03	.263739E-26	-265.8	226	.123541E+03	.263739E-26	-265.8
227	.124090E+03	.263739E-26	-265.8	228	.124638E+03	.281226E-26	-265.5
229	.125187E+03	.289374E-26	-265.4	230	.125736E+03	.289374E-26	-265.4
231	.126284E+03	.289374E-26	-265.4	232	.126833E+03	.368432E-27	-274.3
233	.127382E+03	.368432E-27	-274.3	234	.127930E+03	.368432E-27	-274.3
235	.128479E+03	.225595E-29	-294.9	236	.129027E+03	.225595E-29	-294.9
237	.129576E+03	.225595E-29	-294.9	238	.130125E+03	.344169E-30	-298.7
239	.130673E+03	0.	-300.0	240	.131222E+03	0.	-300.0
241	.131771E+03	0.	-300.0	242	.132319E+03	0.	-300.0
243	.132868E+03	0.	-300.0	244	.133416E+03	0.	-300.0
245	.133965E+03	0.	-300.0	246	.134514E+03	0.	-300.0
247	.135062E+03	0.	-300.0	248	.135611E+03	0.	-300.0
249	.136160E+03	0.	-300.0	250	.136708E+03	0.	-300.0
251	.137257E+03	0.	-300.0	252	.137805E+03	0.	-300.0
253	.138354E+03	0.	-300.0	254	.138903E+03	0.	-300.0
255	.139451E+03	0.	-300.0	256	.140000E+03	0.	-300.0

APPENDIX O

SAMPLE SHARPS 19.0 OUTPUT

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 SHAPPS III PREDICTION BASED ON 27 14Z SEP 82 DATA

01SP/FOTS 81032700Z MO/ 17.5/1513/   32/ 17.5/1514,   34/ 17.5/1514
   90/ 16.0/1510,  140/ 13.9/1504,  180/ 12.2/1499,  200/ 11.5/1497
  240/ 10.4/1494,  300/  9.0/1491,  400/  7.9/1488,  500/  7.0/1487
  800/  5.2/1484, 1200/  3.9/1486, 2000/  2.4/1493, 2200/  2.2/1496
 3000/  2.0/1509, 4000/  1.9/1526, 4206/  1.9/1529
DRX(3260/  943)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(4206)SLD(  34)
DP TGT   95 AVG SVL  1501 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL    22/ 32      22/ 24       1/ 12           922/1190
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1 10?/ 39      74/ 39      32/ 39      -    2099/3571
  MD/2  23/ 28      23/ 28      23/ 28           2099/3571
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    99/ 43      77/ 41      34/ 39           1887/2976
  BTR  145/ 44     127/ 44     110/ 44  591-604 2417/3571
  PSV QT   66 -  66/  45 -  45 NSY  237 -2380/  49 -2316
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD    96/ 44      42/ 40      30/ 38           1570/2380
  BTR  123/ 44     101/ 44      74/ 40           1887/2380
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  130/ 45     100/ 44      37/ 39           2417/3571
  BST  180/ 45     148/ 45     108/ 45  588-615 2628/4166
  BB  MIN-A/R  35/110 MAXSE-A/R  20/255 MAX-A/R  15/365
  PSV QT  122 - 604/  48 - 584 NSY  297 -1785/ 409 -1737
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  193/ 45     169/ 45     128/ 45           2417/3571
  BST  247/ 45     222/ 45     178/ 45  588-641 2628/4166
  BB  MIN-A/R  35/110 MAXSE-A/R  10/421 MAX-A/R  10/544
  PSV QT  237 -1190/  49 -1158 NSY  552 -2976/ 547 -2895
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  187/ 45     182/ 45     168/ 45           2417/3571
  BST  241/ 45     235/ 45     221/ 45  588-636 2628/4166
  BB  MIN-A/R  35/110 MAXSE-A/R  10/407 MAX-A/R  10/531
  PSV QT  221 -1190/  49 -1158 NSY  540 -2976/ 541 -2895
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    28/ 34      28/ 34      45               864/ 864
  BTR    28/ 34      28/ 34      45               946/1158
  GUDP   28/ 34      28/ 34      45               864/ 864
  BTRP   28/ 34      28/ 34      45               946/1158
 SNI     23/ 34      DD   6       PSV    1 -   1    CDC 1067 CDM 1190
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OSFA/FOTS 810327002 MO/ 20.7/1523/   81/ 18.5/1518,  101/ 17.6/1516
  121/ 17.0/1514,  140/ 16.0/1512,  160/ 14.9/1509,  199/ 13.5/1505
  300/ 11.3/1499,  400/  9.5/1494,  600/  5.6/1482,  650/  5.2/1481
  700/  4.8/1481,  800/  4.1/1479, 1400/  2.6/1484, 1800/  2.1/1489
 2100/  2.0/1493, 2600/  1.8/1501, 3000/  1.5/1507, 5121/  1.5/1544
ORX(3937/ 1183)GR( 2.0)BL(1/1)WH( 1)WS(13)BD(5121)SLD(   0)
OP TGT   61 AVG SVL  1506 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL    23/ 34      23/ 31      22/ 22           942/1286
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1   11/ 34      11/ 34      11/ 34      -    1993/3216
  MD/2   23/ 28      23/ 28      23/ 28           1993/3216
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    15/ 34      15/ 34      15/ 34           1358/2509
  BTR    17/ 34      17/ 34      17/ 34  635-646 1782/3136
  PSV OT    32 -  32/  32 -  32 NSY    33 -1930/  33 -1881
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD    12/ 34      12/ 34      12/ 34           1067/1881
  BTR    12/ 34      12/ 34      12/ 34           1358/2509
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    23/ 34      23/ 34      23/ 34           2205/3216
  BST    21/ 34      21/ 34      21/ 34      -    2417/3860
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV OT    33 - 651/  33 -  33 NSY    33 -1286/  33 -1254
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    23/ 34      23/ 34      23/ 34           2205/3216
  BST    21/ 34      21/ 34      21/ 34  639-668 2417/3860
  BB  MIN-A/R  15/336 MAXSE-A/R  10/462 MAX-A/R  10/513
  PSV OT    33 -1286/  33 -1254 NSY  570 -2573/ 582 -2509
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    23/ 34      23/ 34      23/ 34           2205/3216
  BST    21/ 34      21/ 34      21/ 34  639-666 2417/3860
  BB  MIN-A/R  15/336 MAXSE-A/R  10/448 MAX-A/R  10/493
  PSV OT    33 -1286/  33 - 685 NSY  550 -2573/ 545 -1881
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    45/ 52      45/ 52      27               897/1254
  BTR    45/ 52      45/ 52      27               989/1254
  GUDP   45/ 52      45/ 52      27               897/1254
  BTRP   45/ 52      45/ 52      27               989/1254
 SNI     43/ 45      DD  45       PSV    1 -   1    CDC 1015 CDM 1222
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08SP/FOTS 81032700Z MO/ 19.2/1519/   17/ 19.2/1520,   18/ 19.2/1520
   40/ 18.2/1517,   60/ 17.5/1515,   89/ 17.0/1514,  120/ 17.0/1515
  150/ 16.8/1515,  191/ 16.4/1514,  300/ 15.6/1514,  400/ 14.1/1510
  510/ 12.0/1505,  600/  9.1/1496,  700/  6.6/1488,  800/  5.0/1483
  900/  4.4/1482, 1200/  3.2/1483, 1600/  2.5/1487, 1900/  2.1/1490
 2400/  1.8/1497, 3475/  1.6/1515, 4000/  1.6/1524, 6000/  1.6/1561
 6949/  1.6/1578
DRX(3675/ 3273)GR( 2.0)BL(1/1)WH( 1)WS(12)BD(6949)SLD(  18)
DP TGT   79 AVG SVL  1523 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/ 20       1/ 20       1/ 16           853/1286
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1    6/ 27       6/ 27       6/ 24     -     1279/2573
  MD/2   16/ 22      16/ 22      16/ 22           1226/2573
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    11/ 28      11/ 28      11/ 26           1358/2573
  BTR    11/ 28      11/ 28      11/ 28  646-648 1887/3216
  PSV OT    17 -  17/  32 -  32 NSY   17 -1930/  33 -1881
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD     9/ 28       9/ 27       9/ 23           1279/1930
  BTR     9/ 28       9/ 28       9/ 27           1464/1930
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 23           1782/3216
  BST    12/ 28      12/ 28      12/ 28  632-661 1993/3216
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV OT    17 -  17/  33 -  33 NSY   17 -1286/  33 -1254
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 28           1782/3216
  BST    12/ 28      12/ 28      12/ 28  631-675 1993/3216
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV OT    17 -1286/  33 - 682 NSY  453 -2573/ 450 -1881
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    17/ 28      17/ 28      17/ 28           1782/3216
  BST    12/ 28      12/ 28      12/ 28  631-672 1993/3216
  BB  MIN-A/R    /    MAXSE-A/R    /    MAX-A/R    /
  PSV OT    17 - 689/  33 - 672 NSY   17 -1930/  33 -1881
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    22/ 57      22/ 57      45               814/1254
  BTR    22/ 57      22/ 57      45               914/1254
  GUDP   22/ 57      22/ 56      45               814/1254
  BTRP   22/ 57      22/ 57      45               914/1254
 SNI     22/ 22      DD   5       PSV    1 -   1    CDC  971 CDM 1286
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09SM/FOTS 81032700Z MO/ 18.0/1515/   19/ 18.0/1515,   20/ 18.0/1515
   40/ 12.8/1499,   60/  9.4/1488,   80/  7.1/1480,  120/  4.3/1469
  170/  2.8/1463,  220/  1.9/1460,  300/   .8/1457,  400/   .4/1457
  500/   .3/1458,  600/   .2/1459,  700/   .2/1461, 2195/   .1/1485
DRX(3942/-1748)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(2195)SLD(  20)
DP TGT   81 AVG SVL  1470 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   23/ 16     23/ 15     21/  1            944/ 944
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1  93/ 23     74/ 23     42/ 22      -    2787/2787
  MD/2  23/ 17     23/ 17     23/ 17          2787/2787
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   92/ 27     77/ 24     61/ 23          2417/2417
  BTR  139/ 27     94/ 27     94/ 27      -    2998/2998
  PSV QT  218 - 218/  30 -  30 NSY  473 - 473/ 411 - 411
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   89/ 24     70/ 23     30/ 22          1782/1782
  BTR   95/ 24     94/ 24     74/ 24          2099/2099
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  100/ 28     93/ 28     60/ 23          2998/2998
  BST  174/ 28    142/ 28     96/ 28      -    3210/3210
  BB  MIN-A/R  35/ 42 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV QT  404 - 404/ 211 - 211 NSY  905 - 905/ 627 - 627
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  184/ 28    163/ 28    100/ 28          2998/2998
  BST  193/ 28    193/ 28    171/ 28      -    3210/3210
  BB  MIN-A/R  15/ 88 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV QT  683 - 683/ 441 - 441 NSY 1464 -1464/1015 -1015
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  179/ 28    175/ 28    162/ 28          2998/2998
  BST  193/ 28    193/ 28    193/ 28      -    3210/3210
  BB  MIN-A/R  15/ 88 MAXSE-A/R   0/211 MAX-A/R   0/261
  PSV QT  674 - 674/ 417 - 417 NSY 1358 -1358/1015 -1015
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   17/ 21     15/ 16     45               729/ 729
  BTR   17/ 21     17/ 21     45               831/ 831
  GUDR  17/ 21     10/  9     45               729/ 729
  BTRR  17/ 21     16/ 19     45               831/ 831
 SNI    23/ 17     DD   5      PSV    7 -   7    CDC 1015 CDM 1015
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58FA/FOTS 81032700Z MO/ 10.4/1492/   28/ 10.4/1492,   29/ 10.4/1492
   60/  8.9/1487,   80/  8.8/1487,  182/  8.8/1489
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 182)SLD(  29)
OP TGT   90 AVG SVL  1488 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1           464/ 464
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1 100/ 47      89/ 47      81/ 47      -     772/ 772
  MD/2   1/  1       1/  1       1/  1           766/ 766
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  112/ 85      95/ 64      88/ 59           712/ 712
  BTR  163/120     144/ 95     126/ 92      -    843/ 843
  PSV QT  112 - 112/  82 -  82 NSY  321 - 321/ 249 - 249
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   95/ 60      88/ 59      76/ 51           574/ 574
  BTR  122/ 90      99/ 60      89/ 59           652/ 652
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  149/ 98     101/ 66      74/ 49           919/ 919
  BST  191/146     160/101      99/ 64      -    954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV QT  148 - 148/  99 -  99 NSY  369 - 369/ 290 - 290
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  198/151     177/128     142/ 95           919/ 919
  BST  262/202     226/163     179/137      -    954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV QT  272 - 272/ 209 - 209 NSY  545 - 545/ 443 - 443
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  193/147     187/143     178/129           919/ 919
  BST  250/181     243/178     229/165      -    954/ 954
  BB  MIN-A/R   5/  4 MAXSE-A/R   0/ 54 MAX-A/R   0/106
  PSV QT  264 - 264/ 188 - 188 NSY  531 - 531/ 435 - 435
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD   17/167      17/130      25               397/ 397
  BTR   17/184      17/167      25               424/ 424
  GUDP  48/188      48/122      20               408/ 408
  BTRP  48/197      48/186      20               429/ 429
 SNI    50/121     DD  20       PSV   11 -  11    CDC  386 CDM  386
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58WI/FOTS 810327002 MO/  5.5/1473/   19/  5.5/1473,   20/  5.5/1473
   40/  5.8/1475,   60/  5.6/1474,  182/  5.6/1477
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 182)SLD(  40)
DP TGT  101 AVG SVL  1475 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL     1/  1       1/  1       1/  1            482/ 487
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1   55/ 84      55/ 84      51/ 84      -     941/ 974
  MD/2    1/ 84       1/ 84       1/ 83            938/ 974
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   112/ 84     111/ 84     108/ 84            900/ 974
  BTR   201/193     122/187     118/177      -    1120/1169
  PSV QT   75 - 194/ 182 - 182 NSY  509 - 779/ 579 - 777
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD   111/ 84     107/ 84      48/ 84            682/ 682
  BTR   120/119     112/ 84     108/ 84            753/ 779
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   121/188     112/ 84      40/ 84           1266/1266
  BST   216/200     122/190     111/ 84      -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV QT  137 - 194/ 186 - 186 NSY  434 - 682/ 481 - 647
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   220/201     210/198     119/185           1266/1266
  BST   310/218     231/218     212/199      -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV QT  320 - 487/ 374 - 518 NSY  701 - 974/ 775 -1036
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   217/200     214/200     211/198           1266/1266
  BST   307/218     303/218     232/218      -    1364/1364
  BB  MIN-A/R  42/ 20 MAXSE-A/R   0/ 63 MAX-A/R   0/ 90
  PSV QT  313 - 487/ 311 - 388 NSY  688 - 974/ 714 -1036
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    89/128      87/ 86      25               488/ 488
  BTR    89/161      89/ 89      25               488/ 488
  GUDP   95/130      90/ 78      20               487/ 487
  BTRP   95/145      94/ 87      20               487/ 487
 SNI    89/ 72      DD  20       PSV    1 -   1    CDC  487 CDM  487
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```
60SP/FOTS 81032700Z M0/ 17.8/1519/   19/ 17.8/1519,   20/ 17.8/1519
   60/ 14.9/1511,  100/ 13.8/1508,  120/ 13.5/1508,  150/ 13.5/1508
  300/ 13.8/1513,  400/ 13.7/1514,  500/ 13.7/1516,  560/ 13.6/1516
  600/ 13.5/1517,  900/ 13.0/1520, 1100/ 13.0/1523, 2700/ 13.0/1550
DRX(   0/    0)GR( 2.0)BL(1/1)WH( 1)WS(13)BD(2700)SLD(  20)
DP TGT   81 AVG SVL  1528 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL    22/ 15      22/ 15      21/ 14           1014/1014
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1   29/ 23      29/ 23      29/ 23      -    2029/2029
  MD/2   22/ 17      22/ 17      22/ 17           2029/2029
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    74/ 27      64/ 26      46/ 23           2029/2029
  BTR   109/ 27      97/ 27      84/ 27      -    2368/2368
  PSV OT    66 -  66/  32 -  32 NSY  995 -1417/ 727 -1288
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD    69/ 24      51/ 23      25/ 23           1691/1691
  BTR    88/ 24      69/ 24      55/ 24           1691/1691
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD    98/ 28      70/ 28      26/ 23           2368/2368
  BST   135/ 28     106/ 28      67/ 27      -    2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/238 MAX-A/R  15/286
  PSV OT    48 -  48/  32 -  32 NSY  984 -1063/ 699 - 966
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   142/ 28     123/ 28      93/ 28           2368/2368
  BST   181/ 28     163/ 28     130/ 28      -    2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/338 MAX-A/R  15/367
  PSV OT   708 - 708/ 644 - 644 NSY 1570 -1771/1358 -1611
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD   136/ 28     134/ 28     124/ 28           2368/2368
  BST   177/ 28     174/ 28     164/ 28      -    2706/2706
  BB  MIN-A/R  35/ 71 MAXSE-A/R  15/338 MAX-A/R  15/365
  PSV OT   708 - 708/  33 - 644 NSY 1464 -1771/1226 -1611
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD    17/230      17/187      45               879/ 966
  BTR    17/267      17/226      45               957/ 966
  GUDP   17/190      17/152      45               879/ 966
  BTRP   17/233      17/189      45               957/ 966
 SNI     24/ 18      DD   5       PSV    1 -   1     CDC  966 CDM  966
```

```
02HC/FOTS 81032700Z MO/ 20.7/1523/ 2700/ 13.0/1550.*****/  0.0/****
ORX(NA HALF CH)GR( 2.0)BL(1/1)WH( 0)WS( 8)BD(2700)SLD(2700)
OP TGT  305 AVG SVL  1527 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   65/  1      39/  1      25/  1           670/ 670
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1 170/124     138/ 97     113/ 70      -    2099/2099
  MD/2 107/  1     102/  1      77/  1           2099/2099
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  174/125     153/104     120/ 84           1782/1782
  BTR  244/267     216/249     185/237      -    2311/2311
  PSV OT  170 - 170/  92 -  92 NSY  572 - 572/ 733 - 733
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD  148/124     119/ 97     101/ 67           1015/1015
  BTR  193/242     155/133     120/100           1358/1358
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  238/239     185/105     121/ 62           2522/2522
  BST  325/277     269/249     203/113      -    2787/2787
  BB  MIN-A/R  42/ 49 MAXSE-A/R  42/ 71 MAX-A/R  15/301
  PSV OT  259 - 259/ 122 - 122 NSY  673 - 673/ 736 - 736
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  349/290     306/266     234/237           2522/2522
  BST  436/437     402/431     320/275      -    2787/2787
  BB  MIN-A/R  42/ 49 MAXSE-A/R  25/137 MAX-A/R  15/366
  PSV OT  507 - 507/ 450 - 450 NSY 1015 -1015/1226 -1226
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  339/283     329/278     305/266           2522/2522
  BST  432/437     429/437     400/430      -    2787/2787
  BB  MIN-A/R  42/ 49 MAXSE-A/R  25/137 MAX-A/R  15/366
  PSV OT  478 - 478/ 437 - 437 NSY  967 - 967/1120 -1120
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD  167/131     109/101      45               876/ 876
  BTR  181/148     165/124      45               942/ 942
  GUDP 161/116      94/ 86      45               876/ 876
  BTRP 169/138     116/110      45               942/ 942
 SNI    86/ 87     DD  45      PSV    1 -   1    CDC  939 CDM  939
```

```
02NG/FOTS 81032700Z M0/ 20.7/1523/  400/ 16.7/1516,*****/  0.0/****
DRX(NA SHALLOW)GR( 2.0)BL(1/1)WH( 1)WS(13)BD( 400)SLD(   0)
DP TGT   61 AVG SVL  1519 POD 50.

 SNA ---12KTS------18KTS------24KTS-----------CDC/CDM-
  ALL   22/ 21      22/ 21      22/ 21           932/ 932
 SNB ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  MD/1 211/223     202/153     193/ 43      -    1676/1676
  MD/2 198/ 19      20/ 19      20/ 19          1676/1676
 SNC ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  210/221     204/154     199/148          1279/1279
  BTR  386/333     380/325     372/228      -   1782/1782
  PSV QT  200 - 200/ 153 - 153 NSY  878 - 878/ 855 - 855
 SND ---12KTS------18KTS------24KTS-----------CDC/CDM-
  GUD  210/219     201/152     170/ 56          954/ 954
  BTR  378/321     211/224     202/153          1173/1173
 SNE ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  380/326     208/156      34/ 53          1993/1993
  BST  391/410     383/331     207/155      -   2205/2205
  BB  MIN-A/R  42/  7 MAXSE-A/R   0/188 MAX-A/R   0/209
  PSV QT  377 - 377/ 220 - 220 NSY  924 - 924/ 933 - 933
 SNF ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  392/411     390/402     378/317          1993/1993
  BST  392/414     392/414     391/407      -   2205/2205
  BB  MIN-A/R   0/ 74 MAXSE-A/R   0/188 MAX-A/R   0/209
  PSV QT  878 - 878/ 855 - 855 NSY  932 - 932/ 947 - 947
 SNG ---12KTS------18KTS------24KTS-----CZW----CDC/CDM-
  GUD  391/410     391/409     390/403          1993/1993
  BST  392/414     392/414     392/414      -   2205/2205
  BB  MIN-A/R   0/ 74 MAXSE-A/R   0/188 MAX-A/R   0/209
  PSV QT  873 - 873/ 681 - 681 NSY  931 - 931/ 947 - 947
 SNH ---12KTS------18KTS------TD--------------CDC/CDM-
  GUD  132/159     114/131      45              1226/1226
  BTR  132/167     132/155      45              1358/1358
  GUDP 132/147      51/ 83      45              1226/1226
  BTDP 132/164     129/141      45              1358/1358
 SNI    72/ 84     DD  45      PSV    1 -   1    CDC 1358 CDM 1358
```

APPENDIX P

UPDATE IDENT HISTORY FOR PROGRAM USER

$LARAYU	$NOYSU	$TARAYU	$UARAYU		COMDECKS	USER 7.0 UPDATE SETS 7.1*	7.3 (=17.0)	USER 17.0 UPDATE SETS 17.8	17.9	17.12 (=19.0)
					$LARAYU			$LARAY02		$LARAY02
					$NOYSU				$NOYSU*02	$NOYSU*02
					$TARAYU			$TARAY02		$TARAY02
					$UARAYU					
					DECKS					
X	X	X	X		USER	USER*08	USER*11	USER*12	USER*13	USER*12,USER*13
X					LINEU			LINEU*04		LINEU*04
		X			TITLEU			TITLEU*04		TITLEU*04
			X		UNSORTU			UNSORTU05		UNSORTU05

* Indicates an update set that has not been implemented. Idents may change before implementation.

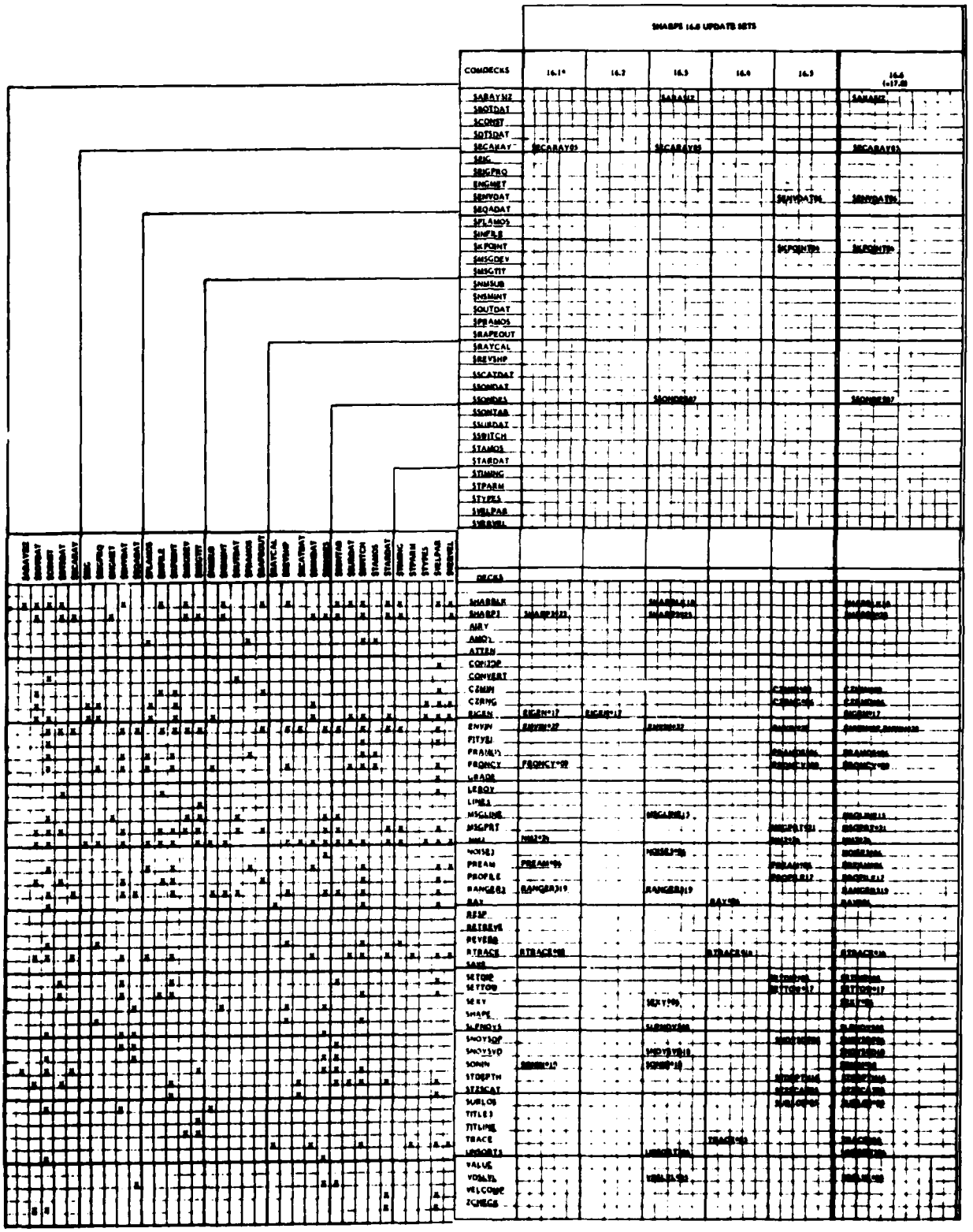
APPENDIX Q

UPDATE IDENT HISTORY FOR PROGRAM POSTSORT

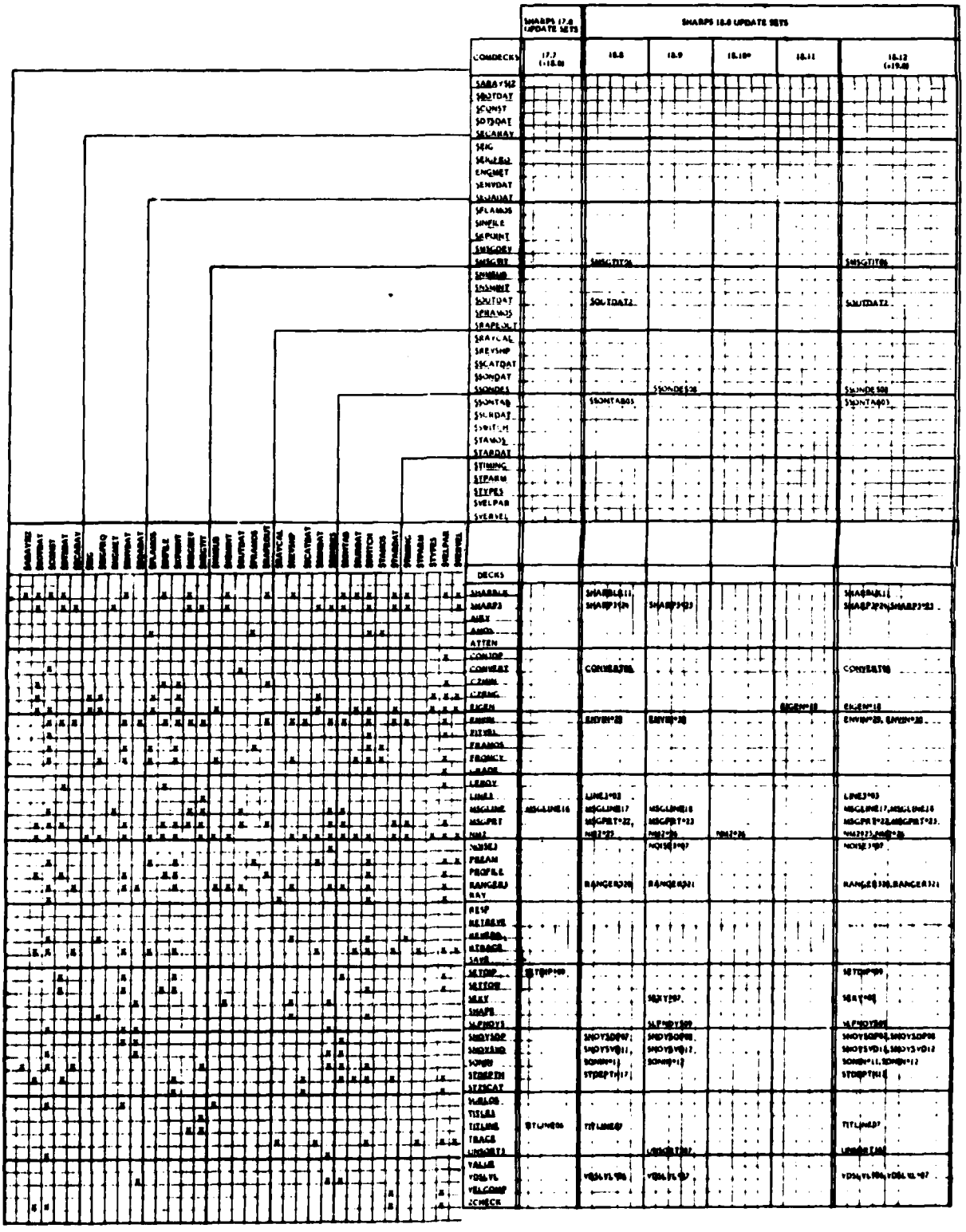
$LARAYP	$NOYSP	$TARAYP	$UARAYP		COMDECKS	POSTSORT 5.0 UPDATE SETS	POSTSORT 17.0 UPDATE SETS		
						5.3 (=17.0)	17.8	17.9	17.12 (=19.0)
					$LARAYP		$LARAYP02		$LARAYP02
					$NOYSP			$NOYSP*02	$NOYSP*02
					$TARAYP		$TARAYP02		$TARAYP02
					$UARAYP				
					DECKS				
X	X	X	X		POSTSRT	POSTSRT08	POSTSRT09	POSTSRT10	POSTSRT09,POSTSRT10
X					LINEP		LINEP*04		LINEP*04
	X				NOISEP			NOISEP*04	NOISEP*04
		X			TITLEP		TITLEP*04		TITLEP*04
			X		UNSORTP		UNSORTP05		UNSORTP05

APPENDIX R

UPDATE IDENT HISTORY FOR PROGRAM SHARPS



* indicates an update set that has not been implemented. Idents may change before implementation.



* Indicates an update set that has not been implemented. Idents may change before implementation.

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This report documents a series of four update sets prepared for the SHARPS-III model and the SHARPS-III preprocessor at the Naval Ocean Research and Development Center (NORDA) and the Fleet Numerical Oceanography Center (FNOC). The first update, which was incorporated in July 1982, reduced the length of the SHARPS-III output message by eliminating blank lines. The second modification added a capability to generate active sonobuoy predictions. The remaining two sets changed the method of determining self-noise for hull mounted sonars,

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and altered the effective ray angles at the sonar and surface used in computing surface reverberation from surface ducted paths. The latter three updates were prepared for implementation in the scheduled 01 Oct 82 SHARPS-III update. Included as appendices to this report are sample SHARPS-III outputs demonstrating the effects of these modifications and listings of the relevant update cards.